

STIC Search Report Biotech-Chem Library

STIC Database Tracking Number: 47/1833

TO: Ginny Portner Location: 3b02/3c18

Tuesday, November 29, 2005

Art Unit: 1645

Search Notes

Phone: 571-272-0862

Serial Number: 09 / 904994

From: Jan Delaval

Location: Biotech-Chem Library

Remsen 1a51

Phone: 571-272-2504

jan.delaval@uspto.gov

·	
	<i>;</i>



STIC-Biotech/ChemLib

From:

Portner, Ginny

Sent:

Wednesday, November 16, 2005 6:32 PM

To:

STIC-Biotech/ChemLib

Subject: 09/904,994

please search SEQ ID NO 1, 2 and 3. thanks

Ginny Portner Remsen Building Art Unit 1645 Room E03, B02 (571) 272-0862

3C18

u/ral »

Jan 37604



STIC SEARCH RESULTS FEEDBACK FORM

B	iotec	h-C	hem	I il	brary.
					~/ E ~ / E · / E

Questions about the scope or the results of the search? Contact the searcher or contact:

Mary Hale, Information Branch Supervisor 22507, Remsen 1d86

Voluntary Results Feedback Form

>	I am an examiner in Workgroup: Example: 1610
>	Relevant prior art found, search results used as follows:
	☐ 102 rejection
	☐ 103 rejection
	☐ Cited as being of interest.
	Helped examiner better understand the invention.
	Helped examiner better understand the state of the art in their technology.
	Types of relevant prior art found:
	☐ Foreign Patent(s)
	 Non-Patent Literature (journal articles, conference proceedings, new product announcements etc.)
>	Relevant prior art not found:
	☐ Results verified the lack of relevant prior art (helped determine patentability).
	Results were not useful in determining patentability or understanding the invention.
Col	mments:



November 2005

Published_Applications Nucleic Acid and Published_Applications Amino Acid database searches now generate two sets of results each. The Published_Applications databases have been split into two parts to reduce the amount of time required for their daily updates. This results in more machine time being available for processing searches.

Newly published applications will appear in the Published_Applications_New databases; older published applications make up the Published_Applications_Main databases.

Searches run against Nucleic Acid Published_Applications produce two sets of results, with the extensions srnpbm (Published_Applications_NA_Main) and .rnpbn (Published_Applications_NA_New).

Searches run against Amino Acid Published_Applications produce two sets of results, with the extensions .rapbm (Published_Applications_AA_New).

ARO61045 Sequence AR161678 Sequence AR349306 Sequence AR349306 Sequence X69080 H. Felis ure X17079 Helicobacte AB11515 H. pylori ur AF332656 Helicobac BD092330 Identific AR071424 Helicobac BD092330 Identific AY74224 Sequence CQ903245 Sequence CQ903245 Sequence CQ903245 Sequence AF752376 Helicobac CQ903245 Sequence AF752376 Helicobac AF752376 Helicobac CONTINUATION (3 Of Y08559 Bacillus su AF79026 Helicobac AF79020 Helicobac

OM nucleic

Run on:

Sequence:

Searched:

Database

```
Bacteria; Proteobacteria, Epsilonproteobacteria, Campylobacterales, Helicobacteraceae; Helicobacter.

1 (bases 1 to 2883)
Kusters,J.G. and Cattoli,G.
Helicobacter felis vaccine
Patent: JP 2002155054-A 1 10-DEC-2002;
AKZO NOBEL NV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PD 10-DEC-2002
PF 16-JUL-2001 JP 2001214711
PR 17-JUL-2000 EP 00202565.8
PI JOHANNES GERARDUS KUSTERS,GIOVANNI CATTOLI
PC
C12N15/09,A61K39/106,A61K39/118,A61K39/112,A61K39/175, PC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A61K39/23,
PC A61K39/235,A61K39/39,A61K39/395,A61P1/04,A61P31/04,C12N1/15,
PC C12N1/19,
PC C12N1/21,C12N5/10,C12N9/80,C12Q1/68,G01N33/15,G01N33/50,G01N33/ P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GOIN33/53, GOIN33/566, GOIN33/569// (C12N9/80, C12R1:01), (C12Q1/68,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Location/Qualifiers (206). (886) (897). (2603).

    .2883
    /organism="Helicobacter felis"

                                                                                                                                                                                                                                                                                                                                                                                                         DNA
                                                                                                                                                                                                                                                                                                                                              ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            C12N15/00,C12N5/00,A61K37/02
Helicobacter felis vaccine
                                                                                                                                       AY714224
BD002530
AY295085
CQ903244
CQ903245
AF32376
AO7398
AO7398
BAO000004_02
BSUEROP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Helicobacter felis
JP 2002355054-A/1
10-DEC-2002
16-JUL-2001 BP 2001214711
17-JUL-2000 BP 00202565.8
                                                                                                                                                                                                                                                                                                                                                                                                         2883 bp
                  AR061045
AR161678
AY327442
AR349305
AR349306
HFURE
HPHPUABG
A31515
AF332656
                                                                                                                                                                                                                                                                       BSUB0019
AF508003
                                                                                                                                                                                                                                                                                               BACUREA
AB201709
                                                                                                                               AE017145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                         288
Helicobacter felis vaccine.
                                                                                                                                                                                                                                                                                                                                                                                                                                             BD185302.1 GI:31877502
                                                                                                                                                                                                                                                                                                                                                                                                                                                     JP 2002355054-A/1.
Helicobacter felis
Helicobacter felis
                                                                                                                                                                         30.6 1707
30.6 1707
30.5 1710
30.5 1710
26.8 10108
26.6 10118
25.6 200690
25.5 6537
                                                                                                                                        1704
1815
1710
1707
                                                                                                                 34.2
34.2
31.0
30.7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C12R1:01
                                                                                                                                                                                                                                                                                                                                                                                                                                  BD185302
                    1062.6
1060.4
1058.6
1058.6
1058.6
1057.8
1056.8
                                                                                                                                                                 884.8
                                                                                                                                                                                                                                                                                     739.4
737.6
733.8
                                                                                                                                                                                                                878.4
                                                                                                                                                                                                                          878.4
                                                                                                                                                                                         881
                                                                                                                                                                                                                                                                                                                                                                                           BD185302
LOCUS
DEFINITION
ACCESSION
VERSION
SOURCE
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                   RESULT 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMMENT
U
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AX35683 Sequence
BD185306 Helicobac
AX356695 Sequence
BD185303 Helicobac
AX35686 Sequence
BD185305 Helicobac
AX35689 Sequence
AX35689 Sequence
AX35689 Sequence
AX35689 Sequence
AX35689 Sequence
AX35689 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AE001446 Helicobac
AE000529 Helicobac
AR054309 Sequence
M60398 H.pylori ur
AB032429 Helicobac
A41006 Sequence 1
                                                                                            (without alignments)
11659.884 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BD185302 Helicobac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                      2883
                                                                                November 28, 2005, 23:29:19 ; Search time 14055 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Description
                                                                                                                                                      1 rggragattttccarcactt.....aaaaaagtagaagccacagg
                                                                                                                                                                                                                                         11766282
           GenCore version 5.1.6
(c) 1993 - 2005 Compugen Ltd.
                                                                                                                                                                                                               5883141 seqs, 28421725653 residues
                                                                                                                                                                                                                                      Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AE001446
AE000529
AR054309
HECUREABCD
AB032429
A41006
                                                                                                                                                                                                                                                                                                Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AX356695
BD185303
AX35686
BD185305
AX356692
BD185304
AX356689
AF330621
HECUREASE
                                                         - nucleic search, using sw model
                                                                                                                                                                                         Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                               Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                US-09-904-994B-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                           9D_ba:*
9D_in:*
9D_om:*
9D_ow:*
9D_bx:*
9D_px:*
9D_px:*
9D_px:*
9D_sx:*
9D_sx:*
9D_w:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query
Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2883
2452
2452
2452
2405
2407
2407
2183
2183
264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          12037
10903
                                                                                                                                                                             IDENTITY NUC
                      Copyright
                                                                                                                                                                                                                                                                                                                                                GenEmbl:*
                                                                                                                                            2883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    12:
                                                                                                                                                                                                                                                                                                    Post-processing:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2228
2228
2158.6
2158.6
2158.6
2158.6
1948
                                                                                                                                                                            Scoring table:
                                                                                                                                Title:
Perfect score:
```

PAT 17-JUN-2003

linear

AB201709 Campyloba

Ы

Ы

טט

Result Š.

8 6 8 6

셤

ŝ

8 6

ኝ 음 장

8 8 8 8

8 8 8 8

8 6 8 6 8 8

```
2100
                                                                                                                                                                                                                           1320
                                                                                                                                                                                                                                                                        1380
                                                                                                                                                                                                                                                                                                                      1440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCAAAAAACAACTTGTAGAACAAGTAGAAGCGGGCGCGATTGGTTTTAAATTTGCATGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                              GCAAAAAACACTTGTAGAACAAGTAGAAGCGGGCGCGCATTGGTTTTAAATTGCATGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CGCAAGCAATGGGGCGTGCAAGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ataaaaaagaatttggtaaggttcctgaagatggcaaagataacgataatttccgcatta
TTAAATTTGGCGCGGGTAAAACTATCCGTGAGGGTATGGGTCAGAGCAATAGCCCTGATG
                                                                                AAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTACA
                                                                                                                                             GGGAAGGTATGATTATTACCGCTGGGGGAATGGATTCACACACCCCACTTCCTTTCTCCAC
                                                                                                                                                                                                                                                                                              AACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGTC
                                                                                                                                                                                                                                                                                                                                 CTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATGT
                                                                                                                                                                                                                                                                                                                                                                                TGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTTGGGCAAAGGCAATAGCTCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACTGGGGCACAACACCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATGCAATGAACGGGCGCCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGGACACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TTAAATTTGGCGCGGGTAAAACTATCCGTGAGGGTATGGGTCAGAGCAATAGCCCTGATG
                                                                                                                               AAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAGG
                                                                                                                                                                             ACATGCAAGATGGCGTAAAGCCCTCATATGGTCGTGGGGTGTGGGCACAGAAGCACTAGCAG
                                                                                                                                                                                                                                                                                                                      CTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATGT
                                                                                                                                                                                                                                                                                                                                                                     TGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTTGGGCAAAGGCAATAGCTCTA
                                                                                                                                                                                                                                                                         AACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2041
                                                                                                                                                                                                                                                                                                                                                                                           1441
                                                           1021
                                                                                 1081
                                                                                                        1081
                                                                                                                               1141
                                                                                                                                                       1141
                                                                                                                                                                             1201
                                                                                                                                                                                                    1201
                                                                                                                                                                                                                            1261
                                                                                                                                                                                                                                                 1261
                                                                                                                                                                                                                                                                         1321
                                                                                                                                                                                                                                                                                               1321
                                                                                                                                                                                                                                                                                                                      1381
                                                                                                                                                                                                                                                                                                                                            1381
                                                                                                                                                                                                                                                                                                                                                                     1441
                                                                                                                                                                                                                                                                                                                                                                                                                  1501
                                                                                                                                                                                                                                                                                                                                                                                                                                         1501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                1561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1921
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1921
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1981
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1981
                                    1021
              196
                                                                                                                                              음
중
음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                              8 8 8
                                                                                                 g
                                                                                                                             8
                                                                                                                                                                                              a
                                                                                                                                                                                                                           8 6
                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                          Б
                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                     임
                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                           8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     & <del>8</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         $ 8 $
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          961 TAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTATACCACCTATGGCGAAGAAC 1020
                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             960
                                                                                                                                                                                         180
                                                                                                                                                                                                                                       240
                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                    300
                                                                                                                                                                                                                                                                                                           300
                                                                                                                                                                                                                                                                                                                                  360
                                                                                                                                                                                                                                                                                                                                                        360
                                                                                                                                                                                                                                                                                                                                                                                420
                                                                                                                                                                                                                                                                                                                                                                                                       420
                                                                                                                                                                                                                                                                                                                                                                                                                              480
                                                                                                                                                                                                                                                                                                                                                                                                                                                     480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         780
                                                                                                                                          120
                                                                                                                                                                120
                                                                                                                                                                                                               180
                                                                                                                  9
                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                           CAACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTGTTCTTTGGTGG
                                                                                                                                         TAAAATTTAACACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTT
                                                                                                                                                                                                                                                                                               GITATATTATGCGGGCGAAGTGGCTAGAAAGCGCAAAGCAGAGGGCTTAAAGCTCAACCA
                                                                                                                                                                                                                                                                                                                                               ACCCGAAGCCATTGCTTACATTAGTGCCCATATTATGGACGAAGCGCGCCGTGGAAAAA
                                                                                                                                                                                                                                                                                                                                                                                            ACTTGTAACTGTGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGGGGAAGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACTIGITALITICADATIGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGGGGGAGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATTTGGTTGCGATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TACTAATGAAGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TACTAATGAAGGCCTAAATCCTTGCATGTGGGGTAGCCATTTCCACTTCTTTGAAGCTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CAAGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CAAGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGGTATTCCCTCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CAGTAAAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCATAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       901 AAATGAAAAAACAAGAATATGTAAATACCTACGGACCCACCAAAGGCGATAAAGTGCGCT
                                                                                                                                                                                                     TTACTTATATTAAAAAGTTAATAAAAAGTAACGAAATTAGGGCTATAATCCCATTGCCTT
                                                                                                                                                                                                                                                                                                                                  ACCCGAAGCCATTGCTTACATTAGTGCCCATATTATGGACGAAGAGGGCGCGTGGAAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CAACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CAGTAAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCATAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 901 AAATGAAAAACAAGAATATGTAAATACCTACGGACCCACCAAAGGCGATAAAGTGCGCT
                                                                                                                                                                                         TTACTTATATAAAAAGTTAAAAAAGTAACGAAATTAGGACTATAATCCCATTGCCTT
                                                                                                                                                                                                                                      TAAAATTTAACACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGGAAAAGTTCTT
                                                                                                                                                                                                                                                                                    GTTATATTATGCGGCGAAGTGGCTAGAAAGCGCAAAGCAGAGGGCTTAAAAGCTCAACCA
                                                                                                                                                                                                                                                                                                                                                                                RGGRAGATTTTCCARCACTTCAAGCACATATTGATCCTGTGTTGTGGGTGGTAAATTRCR
                                                                      Gaps
                                                                      ö
                                                 Length 2883
                                                                      Indels
                                                 .
9
                                                                      ;
0
                                                                                             RGGRAGATTTTCCARCACTTCAAGCACATATTGATCCTGT
                                                DB
                                               Query Match 99.9%; Score 2880.6; Best Local Similarity 100.0%; Pred. No. 0; Matches 2883; Conservative 0; Mismatches
  /mol_type="genomic DNA"
/db_xref="taxon:214"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       781
                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 781
                                                                                                                                            61
                                                                                                                                                                                        121
                                                                                                                                                                                                             121
                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           481
                        ORIGIN
```

6 B 6 B 6 B 6

8 6

8 6 8 ద ò g 8 g ò 쉱 ઠે පු 8 a 8 원 ઠે ద 8 g

```
// note="undamed protein product"
/codon start=1
/codon start=1
/transl_table=11
/protein id="cab23256.1"
/db_xref="G1:18674022"
/db_xref="G1:18674022"
/db_xref="G1:18674022"
/db_xref="G1:18674022"
/db_xref="G1:18674027"
/db_xref
                                                                                                                                                                                                                                                           /trans__table=11
/protein_id="CAD23255.1"
/brotein_id="GAD23255.1"
/db_xref="G1:18674021"
/translation="MKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIM
DEARRGKKTVAQLMEECKHFLKKDEVMPGVGNNVPDLGVEATFPDGTKLVTVNWPIEP
DEHFKAGEWKFGONGDIELNAGKEVTELEVTNEGPKSLHVGSHFHFPEANKALKFDRE
KAYGKRLDIPSGNTLRIGAGQTRKVQLIPLGGSKKVIGMNGLNNIADERHKHKALDK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LHEDWGTTPSAIDHCLSVADEYDVQVCIHTDTVNRAGYVDDTLNAMNGRAIHAYHIBG
AGGGREDVITTWAGELAILPSSSTPTIPTINYTABHLDMMTCHHLDGKRIREDLQFS
QSRIRPGSIAAEDVLHDMGVIAMTSSDSQAMGRAGEVIPRTWQTADKNKKEFGKLLPED
GKDNDNFRIKRYISKTINPALTHGVSEYIGSVEBGKIADLVVMNPAFEGVKPKIVIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGMVVPSEMGDSNASVPTPQPVYYREMPGHHGKAKFDTSITFVSKVAYENGVKEKLGL
ERQVLPVKNCRNITKKDFKFNDKTAKITVDPKTFEVFVDGKLCTSKPTSQVPLAQRYT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACTTGTTAATRCTATTAATTAATTTAATTACTTATTATCATATAATAATTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TAAAATTTAACACAAGGAGTAAATAGGTGAAACTCACACCCAAAAGAGCAAGAAAAGTTCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TAAAATTTTAACACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGGAAGAAAGTTCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GTTATATTATGCGGCGAAGTGGCTAGAAAGCGCAAAGCAGAGGGCTTAAAAGCTCAACCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACCCGAAGCCCATTGCTTACATTAGTGCCCATATTATGGACGAAGCGCCGCGCGTGGAAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RGGRAGATTTTCCARCACTTCAAGCACATATTGATCCTGTGTTGTGGGTGGTAAATTRCR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TTACTTATATAAAAAGTTAATAAAAAGTAACGAAATTAGGACTATAATCCCATTGCCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .;
0
                                                                                                                                                                                          206. .886
/note="unnamed protein product"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                          /organism="Helicobacter felis"
/mol_type="unassigned DNA"
/db_rref="taxon:214"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        99.9%; Score 2880.6;
100.0%; Pred. No. 0;
iive 0; Mismatches
Patent: EP 1176192-A 1 30-JAN-2002;
Akzo Nobel N.V. (NL)
Location/Qualifiers
                                                                                                                                                                                                                                           codon start=1
transl_table=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .2603
                                                                                                                                                                                                                                                                                                                                                                                                                                                           AKSHGFIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Sim
Matches 2883;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  361
                                                                                    source
     JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                      FEATURES
                                                                                                                                                                                          CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2400
                                                                                                          2160
                                                                                                                                                                                                                                                                                                                                                                              2340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2520
                                                                                                                                                                 2220
                                                                                                                                                                                                                  2220
                                                                                                                                                                                                                                                                      2280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2520
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2580
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2640
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2760
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2760
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2820
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2041 ATAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATTA 2100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTCTAG 2580
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CCCAGCGCTACACTTTCTTCTAGGCACAATGCCCCCTTTGGGGGCAGGTTATTTTAGGAA 2640
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TCTTCATCAAACGCACCTGCAATCGGTCTTGCGTGTGCGATCGTGTCGCTTTAAAACAAC 2700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TCTTCATCAAACGCACCTGCAATCGGTCTTGCGTGTGCGGATCGTGTCGTGTTAAAACAAC 2700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TATGCCCCCTCATTTTAAAGGAGAATTATGCGTAGGTCTTTGGTATTGCTATGTGGGGG 2820
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Helicobacter felis
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
                                                                                    2101 AGCGCTACATCTCCAAATACACTATCAACCCCGCTTTGACCCACGGCGTGAGCGAGTATA
                                                                                                                                                                                            2161 TCGGCTCTGTGGAAAAAGAGGCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTG
                                                                                                                                                                                                                                                                                                                                                                                                            CTAACGCGTCTGTGGCCCCCCCAACCCGGTTTATTACCGCGAAATGTTTGGGCATCACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGCG
                                                                                                                                                                                                                                                                         GCGTAAAACCCCAAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGATT
                                                                                                                                                                                                                                                                                                          GCGTAAAAACCCAAAAATCGTGATCAAAGGCGGTATGGTGTCTTCTCTGAAATGGGCGATT
                                                                                                                                                                                                                                                                                                                                                                              CTAACGCGTCTGTGCCCACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTCTACCGGTCAAAAACTGCCGTAACATCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGAAAGAAAAACTGGGCTTAGAGCGCCAAGTTCTACCGGTCAAAAAACTGCCGTAACATCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CCAAGAAAGACTTCAAGTTCAACGACAAAACGGCAAAAATCACCGTCGAAAAACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTCTAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TATGCCCCCTCATTTTTAAAGGAGAATTATGCGTAGGTCTTTGGTATTGCTATGTGGGGG
                                                                                                                                                                 TCGGCTCTGTGGAAGAGGCCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITICALCITTAAGCAATCGCCATTITTAATTTAATTTAATTCTTATAATTAATATTATAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AX356683 2883 bp
Sequence 1 from Patent EP1176192.
AX356683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AX356683.1 GI:18674020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      _8
_8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2521
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2821
                                                            2101
                                                                                                                                                                 2161
                                                                                                                                                                                                                                                                         2221
                                                                                                                                                                                                                                                                                                                          2221
                                                                                                                                                                                                                                                                                                                                                                              2281
                                                                                                                                                                                                                                                                                                                                                                                                                                  2281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2521
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2761
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2761
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2821
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2881
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2881
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2341
```

ö

Gaps

; 0

Indels

Length 2883;

120 120 180 180

9

240

240 300 300 360 420 420 480

CGGGGTGGGTAATATGGTTCCCGGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAA

421 421

ò

Helicobacteraceae, Helicobacter.

RESULT 2
AX35683
LOCUS
DEFINITION
ACCESSION
VERSION
VERSION
CEYWORDS
SOURCE
ORGANISM

Kusters, J.G. and Cattoli, G. Helicobacter felis vaccine

REFERENCE AUTHORS TITLE

셤

8 6 8 6 8 6 8

1621 TGCAAGTTTGTATCCACACCAAGTGCAATCGATTGAGCGTGCGAAGTGAATCACTCAT 1620	2581 CCCAGCGCTACACTTTCTTCTAGGCACAATGCCCCCTTTGGGGGGCACAGTTATTTAGGAA 2640 2641 TCTTCATCAACGCACCTGCAATGCGTCTTGCGTGTGCGGTGCTGTTTAAAACAAC 2700
6 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	g &
ACTIONACIONALITICOCCIONACCIONACCIONACCIOCATOCACCIOCATOCACCIONACCIO	1501 GCAAAAACAATTGTAGAACAAGTAGAAGCGGCGCATTGGTTTTAAATTGCATGAAG 1560

 6
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8
 8

õ В õ g ò Ω ठे පු

```
1058
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1358
                                                                                                                                            458
                                                                                                                                                                                                                         360
                                                                                                                                                                                                                                                   578
                                                                                                                                                                                                                                                                                                       638
                                                                                                                                                                                                                                                                                                                                                         698
                                                                                                                                                                                                                                                                                                                                                                                  540
                                                                                                                                                                                                                                                                                                                                                                                                             758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   878
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     938
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        960
                                                                                                                                                                     300
                                                                                                                                                                                                                                                                           420
                                                                                                                                                                                                                                                                                                                               480
                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 818
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           720
                                                    301 CCACTTTCCCCGATGGCACCAAACTCGTAACTGTGAATTGGCCCATCGAACCTGATGAAC
                                                                                                                                                                                                                                                                  661 ATATTGCGGACGAACGCATAAACACAAAGCGCTAGACAAAGCAAAATCTCACGGATTTA
                                                                                                                                            TGAAAAAAGATGAAGTAATGCCCGGGGTGGGTAATATGTTCCCGATCTAGGTGTAGAAG
                                                                                                                                                                                                                                                                                                                                421 AGGAAGTTACCGAACTAGAAGTTACTAACGAAGGACCTAAATCCTTGCATGTGGGTAGCC
                                                                                                                                                                                                                                                                                                                                                                                                             AACGCCTAGATATTCCCTCTGGCAACACGCTACGCATTGGGGCAGGACAAACCCGCAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TGCAGTTGATTCCTCTTGGTGGCAGTAAAAAGTGATTGGCATGAACGGGCTTGTGAATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TCAAGTAAGGAGACTCCCATGAAAATGAAAAAAAAAAGAATATGTAAATACCTACGGACCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       721 TCAAGTAAGGAGACTCCCCATGAAAATGAAAAAACAAGAGTATGTAAATACCTACGGACCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           939 ACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      999 TATACCACCTATGGCGAAGAACTTAAATTTGGCGCGGGTAAAACTATCCGTGAGGGTATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             961 ATTGACTACACCGGGATTTACAAAGCCGACATTGGCATTAAAAATGGCAAAATCGCCATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GTGGGCACAGAAGCACTAGCAGGGGAAGGTATGATTATTACCGCTGGGGGATCGATTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CACACCACTTCCTTTCTCCACAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACC
             CCAAAGAGCAAGAAAAGTTCTTGTTATATTATGCGGGCGAAGTGGCTAGAAAGCGCAAAG
                                        CAGAGGGCTTAAAGCTCAACCAACCCGAAGCCATTGCTTACATTAGTGCCCATATTATGG
                                                                                                                   accacciccicciccacaaaaaccciricccaaciriarcaaacacicrariccacririr
                                                                                                                                                                                                                                                   ACTICAAAGCGGGCGAAGTGAAATTTGGTTGCGATAAAGACATCGAGCTCAATGCAGGCA
                                                                                                                                                                                                                                                                                                       AAGAAGTAACCGAACTTGAGGTTACTAATGAAGGGCCTAAATCCTTGCATGTGGGTAGCC
                                                                                                                                                                                                                                                                                                                                                           ATTTCCACTTCTTTGAAGCTAACAAGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACATCGCGGATGAACGCCATAAACATAAAGCGCTTGACAAGGCGAAATCTCACGGATTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1059 GGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCACTAACGCGATGATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGGGGAATCGATTCA
                                                                                            CCACCTTTCCTGATGGTACGAAACTTGTAACTGTGAATTGGCCCATCGAACCAGATGAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1119 ATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1179 ATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGGGT
339
                                                                                                                     181
                                                                                                                                                                                                                                                    519
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        879
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1299
                61
                                         279
                                                                  121
                                                                                                                                               399
                                                                                                                                                                                                  459
                                                                                                                                                                                                                                                                                                        579
                                                                                                                                                                                                                                                                                                                                                           639
                                                                                                                                                                                                                                                                                                                                                                                                               669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  759
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    819
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            901
                                                                                                                g
                                                                                                                                                                   임
                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                             q
                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                8 B
                                                            셤
                                                                                   ઠે
                                                                                                                                               ò
                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                    Ś
                                                                                                                                                                                                                                                                                                     ठे
                                                                                                                                                                                                                                                                                                                                                                                                            ਨੇ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                 TATGCCCCCTCATTTTTAAAGGAGAATTATGCGTAGGTCTTTGGTATTGCTATGTGGGGG 2820
                                                                                                                                    TCTTCATCAAACGCACCTGCAATCGGTCTTGCGTGTGCGATCGTGTCGCTTTAAAACAAC 2700
                                                                                                                                                                                                                                                                                PAT 17-JUN-2003
                                                                                                                                                                                                                                                                                                                                                                         Epsilonproteobacteria; Campylobacterales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             5/09, A61K38/00, A61K39/106, A61K39/118, A61K39/12, A61K39/175, PC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  М
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          219 CCAAAGAGCAAGAAAAGTTCTTGTTATATTGCGGGCGAAGTGGCTAGAAAGCGCAAAG 278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A61K39/235, A61K39/39, A61K39/395, A61P1/04, A61P31/04, C12N1/15,
C12N1/19,
                            PC
CI2N1/21, C12N5/10, C12N9/80, C12Q1/68, G01N33/15, G01N33/50, G01N33/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       53,
PC
GOIN33/53,GOIN33/566,GOIN33/569//(C12N9/80,C12R1:01),(C12Q1/68,
                                                                                             TATGCCCCCTCATTTTAAAGGAGAATTATGCGTAGGTCTTTGGTATTGCTATGTGGGGG
                                                                                                                                               159 AGGACTATAATCCCATTGCCTTTAAAATTTAACACAAGGAGTAATAGGTGAAACTCACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 AGGACTATAATCCCATTGCCTTTAAAATTTAACACAAGGAGTAATAGGTGAAACTCACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 2452;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match 77.3%; Score 2228; DB 6; Length 24 Best Local Similarity 94.3%; Pred. No. 0; Matches 2312; Conservative 0; Mismatches 140; Indels
                                                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       16-JUL-2001 JP 2001214711
17-JUL-2000 EP 00202565.8
JOHANNES GERARDUS KUSTERS,GIOVANNI CATTOLI
                                                                                                                                                                                                                                                                                                                               JP 2002355054-A/5.
Helicobacter felis
M Helicobacter felis
Bacteria; Proteobacteria; Epsilonproteoba
Helicobacteraceae; Helicobacter.
1 (bases 1 to 2452)
Kusters, J.G. and Cattoli, G.
Helicobacter felis vaccine
Patent: JP 2002355054-A 5 10-DEC-2002;
AKZO NOBEL NV
AKZO NOBEL NV
OX Helicobacter felis
PN JP 2002355054-A/5
PD 10-DEC-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   11:01),
Helicobacter felis vaccine
Key
CDS
(189) . (728)
CDS
Location/Qualifiers
(739) . (2445).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1.2452
/organism="Helicobacter felis"
/mol type="genomic DNA"
/db_xref="taxon:214"
                                                                                                                                                                                                                                                                                 DNA
                                                                                                                                                                                                                                                                          2452 bp
Helicobacter felis vaccine.
B1185306.
JP 20021ccc.
                                                                                                                                                                                                               2883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A61K39/23,
PC A61K39
PC C12N1/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            C12R1:01),
PC C12N15
CC Helico
FH Key
FT CDS
                                                                                                                                                                                      AGG 2883
                                                                                                                                                                                                         AG-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2761
     2641
                                                       2701
                                                                               2761
                                                                                                                                    2821
                                                                                                                                                                                     2881
                             2701
                                                                                                                                                                                                               2881
                                                                                                                                                                                                                                                    RESULT 3
BD185306
LOCUS
DEFINITION
ACCESSION
VERSION
VERNORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          source
                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURES
```

ð ద ò φ

2558 2400

2452

```
'LETALL ALTOR OF THE WARK OF THE ALTOR OF TH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
/protein_id=1
/protein_id=11
/protein_id=128674033.1"
/bramslation="MKLTPREQEKFLLYYAGEVARRRKAEGLKLNOPEAINYISAHIN
DEARRGKKYAELMBECMHFLKAEDEWNPODLGVEATFPDGTKLYVWNFIEP
DEHRKAGEVKRGCDNDISLARGKEVTELEVTNBGPKSLHVGSHFHFFEANKALKFDRE
KAYGKRLDIPSGNTLRIGAGQTRRVQLIPLGSKKVIGMNGIANNIADERHKHALDK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Helicobacter felis
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                             PAT 13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGGACTATAATCCCATTGCCTTTAAAATTTAACACAAGGAGTAATAGGTGAAACTCACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGAGAGGAAACTCTGCACCTCTAAA
                                                                GTGAAAAACTGCCGTAACATCACCAAGAAGGACTTCAAGTTCAACGACAAAAACTGCAAAAA
                                                                                                        ATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                            CCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTCTAGGCACAAT
                                                                                                                                                                                                                   CCCACCTCTGAAGTGCCTCTAGCCCAACGCTACACTTTCTTCTAGGCATAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6; Length 2452;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                             linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           77.3%; Score 2228; DB 6; 94.3%; Pred. No. 0; ive 0; Mismatches 140;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          48.<sup>7.728</sup>/note="unnamed protein product"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="unnamed protein product"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            felis"
                                                                                                                                                                                                                                                                                                                                               DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Kusters, J.G. and Cattoli, G.
Helioobacter felis vaccine
Patent: EP 1176192-A 13 30-JAN-2002,
Akzo Nobel N.V. (NL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1. .2452
/organism="Helicobacter for
/mol_type="unassigned DNA'
/db_xref="taxon:214"
                                                                                                                                                                                                                                                                                                                                             AX356695 2452 bp
Sequence 13 from Patent BP1176192.
AX356695
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /transl_table=11
/protein_id="CAD23264.1"
/db_xref="G1:18674034"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /codon_start=1
/trans1_table=1
                                                                                                                                                                                                                                                                                                                                                                                                           GI:18674032
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AKSHGFIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                                                                                             AX356695.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Local Sim
Matches 2312;
                                                                2281
                                                                                                          2499
                                                                                                                                                  2341
                                                                                                                                                                                            2559
                                                                                                                                                                                                                                    2401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    159
                      2439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                AX356695
LOCUS
                                                                                                                                                                                                                                                                                                                                                                 DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                       ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                       요
                                                                                                                                   g
                                                                                                                                                                                          8
                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2438
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2280
                                                                                                                                                                        1320
                                                                                                                                                                                                                                                                                                                                             1440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1718
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1778
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1898
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GACATGCTTATGACCTGCCACCTAGATAAACGCATCCGCGAGGATCTCCAATTTTCT 1740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CAAAGCCGTATCCGCCCCCGGCTCTATCGCCGCTGAAGATGTGCTCCATGATATCGGTGTG 1800
CACACCCACTTCCTCTCTCCACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACA 1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATCGCGATGACAAGTTCCGATTCGCAAGCAATGGGGCGCGCTGGGGAAGTGATTCCTAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACTTGGCAAACTGCAGACAAGAATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGTGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCCATGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGATCGCCGACTTGGTG
                                                                ATGTTTGGCGGTGGCACAGGCCCCCTAGATGGCACGAATGCGACTACCATCACTCCGGGC
                                                                                                                                                                                                                                           AGCGTAGCAGATGATATACGATGTGCAAGTTTGTATACACACCGATACGGTCAATGAGGCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              craccriccriccacaacccracrarcccrarraccarraaracccriccacaacacrra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGCQAAGATCGCCGACTTGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCCACTCCCCAACCGGTTTATTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GTGTTCTCTGAAATGGGCGATTCTAATGCGTCTGTGCCCACTCCTCAGCGGTTTATTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCCAGCATCACTTTGTTTCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAAGTCGCCTATGAAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCGCCCAAGTTCTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAAGTCGCCTATGAAAATGGTGTGAAAAAAAAAAAAAAGTTTAGAGCGCAAGGTGCTCCCC
                                                                                                                                                    AAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGATTCTATGAATGTGGGCTTT
                                                                                                                                                                                                                                                                                                                                                                                       AGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACACGATACAGTCAATGAGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GAGGGAGCGGGAGGACACTCACCTGATGTTATCACCATGGCAGGCGAAGTGAATATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GATAACGATAATTTCCGCATTAAGCGCTACATCTCCCAAATACACTATCAACCCCGCTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCC
                                                                                                                            AAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTT
                                                                                                                                                                                                                GACATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCT
                                          ATGTTTGGAGGCGGCACAGGTCCTGTAGATGGCACGAATGCGACTACTATCACTCCGGGC
                                                                                                                                                                                                                                                                                                   1539
                                                                                                                                                                                                                                                                                                                                                                                                                               1441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1959
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2221
                                                                                                                            1419
                                                                                                                                                                      1261
                                                                                                                                                                                                                1479
                                                                                                                                                                                                                                                                                                                                             1381
                                                                                                                                                                                                                                                                                                                                                                                       1599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1659
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1719
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1779
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1839
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1899
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1921
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1981
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2041
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2101
                                                                                  1201
                                                                                                                                                                                                                                                        1321
1141
                                          1359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1501
                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ብ ራ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                         g
                                                                                                                                                                                                                                           q
                                                                                                                                                                                                                                                                                 õ
                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                              õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                    g &
                                                                                                                                                                                                          ò
                                   ò
```

ö

Gaps

111 CACCCACTTCCTCTCCTCTCACACACTTCCTCTCCCCTTCTCTCTCTCTTCT
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
13 COMMONGCOMMANDETICITYTANTITYTOGGGGGGAAGGGGAAGGGCCAAAAAACGCCAAAA G 120

œ

음

셤

ð

ò

g

DP

ò

```
1465
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1045
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1141 regretracaaccarerrregaegregeacacaerecegracaregeaceacearegeaceae 1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     745
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     805
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      865
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      985
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               780
                                                                                                                                                                                                                                    565
                                                                                                                                                                                                                                                                           360
                                                                                                                                                                                                                                                                                                                   625
                                                                                                                                                                                                                                                                                                                                                          420
                                                                                                                                                                                                                                                                                                                                                                                                     685
                                                                                                                                                                                                                                                                                                                                                                                                                                          480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CAAACCCGTAAAGTGCAGTTAATCCCTCTTGGCGGTAGTAAAAAAGTGATTGGCATGAAC 600
445
                                                                                                           240
                                                                                                                                                  505
                                                                                                                                                                                         300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGGCTTGTGAATAATATTGCGGACGAACGCCATAAACACAAAAGGCACTAGACAAGGCAAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATTGGGGCAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        926 TACCTACGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CACCTACGACCCACCACCACCAGGGGATAAAGTGCGCTTAGGAATACCGATACTTGGGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGTAGAACATGACTATACCACCTATGGCGAAGAACTTAAATTTTGGCGCGGGGTAAAACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CCGTGAGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TATGGTCGTGGGTGTGGGCACAGAAGCACTAGCAGGGGAAGGTATGATTATTACCGCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1021 TATGGTCGTGGGCTGTGGGCACAGAAGCTAGCAGGGAAGGTATGATTATTACCGCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAGTGATTGGCATGAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1106 TAACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAACGCGATGATTATCGACTACACCGGGATTTATAAAGCCGACATTGGTATTAAAAATGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CAAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGGAATCGATTCACACCCACTTCCTTCTCCACAACAATTCCCTACCGCTCTAGCCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGGCGTTACAACCATGTTTGGAGGCGCACAGGTCCTGTAGATGGCACGAATGCGACTAC
                                                                                          TGTATGCACTTTTTGAAAAAAGATGAGGGGGGGGGGGATATGGTCCCTGAT
                                                                                                                                                    CTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTGTGAATTGGCCCATC
                                                                                                                                                                            TTGGGCGTAGAAGCCACTTTCCCCGATGGCACCAAACTCGTAACCGTGAATTGGCCCATT
                                                                                                                                                                                                                                    GAACCAGATGAGCACTTCAAAGCGGGGGAAGTGAAATTTGGTTGCGATAAAGACATCGAG
                                                                                                                                                                                                                                                              CTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAGGGCCTAAATCCTTG
                                                                                                                                                                                                                                                                                                                                                          crcaaceceegraaggaagrracegaecrreaagrraceaaceaaggaecraaarcerre
                                                                                                                                                                                                                                                                                                                                                                                                     CATGTGGGTAGCCATTTCCACTTTGAAGCTAACAAGGCACTAAAATTCGATCGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                              CATGTGGGTAGCCATTTCCACTTCTTTGAAACCAACAAGGCATTGAAATTCGATCGGGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGGCTTGTGAATAACATCGCGGATGAACGCCATAAACATAAAGCGCTTGACAAGGCGAAA
                                                                  AAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATTGGGGCCAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1346 '
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1286
                                                                  386
                                                                                                         181
                                                                                                                                                    446
                                                                                                                                                                                           241
                                                                                                                                                                                                                                    909
                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                      266
                                                                                                                                                                                                                                                                                                                                                            361
                                                                                                                                                                                                                                                                                                                                                                                                     626
                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       746
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         908
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      196
                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                          ⋧
                                                                                                                                                                                g
                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                ద
                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ठे
                                                                                                                                                                                                                                                                                                                                                                                                                BD18533.1 GI:31877503
JP 2002355054-A/2.
Helicobacter felis
Helicobacter felis
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
1 (bases 1 to 2405)
Kusters,J.G. and Cattoli,G.
Helicobacter felis vaccine
Patent: JP 2002355054-A 2 10-DEC-2002;
                                                                                                                                                                       2400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
      AAAGTCGCCTATGAAAATGGTGTGAAAGAAAAACTAGGTTTAGAGCGCAAGGTGCTCCCC 2280
                                                                                                                                                                                                                                                                                                                                                               PAT 17-JUN-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61 AGAAAGCGCAAAGCAGGGCTTAAAGCTCAATCAACCGAAGCCATGCCTACATAGT 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ы
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Я
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      326 GCCCATATTATGGACGAAGCGCGCGGGGAAAAAAAAACCGTTGCCCAGCTTATGGAAGAG 385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A61K39/235, A61K39/39, A61K39/395, A61P1/04, A61P31/04, C12N1/15, C12N1/19,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OS Helicobacter felis
PN DF 2002355554-A/2
PD 10-DEC-2002
PF 16-JUL-2001 JP 2001214711
PR 17-JUL-2000 EP 00202555.8
PI JOHANNES GERARDUS KUSTERS, GIOVANNI CATTOLI
PC 12N15/09_A61K38/00, A61K39/116, A61K39/115,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A61K39/23,
PC A61K39/235,A61K39/39,A61K39/395,A61P1/04,A61P31/04,C12N1/15
PC C12N1/19,
PC
C12N1/21,C12N5/10,C12N9/80,C12Q1/68,G01N33/15,G01N33/50,G01N33/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PC. (C1201/68, G01N33/566, G01N33/569//(C12N9/80, C12R1:01), (C12Q1/68, C12R1:01), (C12Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 GTGAAACTCACACCCAAAGAGAAAAGTTCTTGTTATATTTATGCGGGCGAGTGGCT
                                                                                                                                                    266 AGAAAGCGCAAAGCAGAGGCTTAAAGCTCAACCAACCCGAAGCCATTGCTTACATTAGT
                                                                  206 GTGAAACTCACACCCAAAGAGCAAGAAAGTTCTTGTTATTATTATGCGGGCGAAGTGGCT
                                                                                                                               ATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAA
                                               GTCAAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCAACGACAAAAAGCGCAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                            CCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTCTAGGCACAAT 2610
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2405;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 2158.6; DB 6; Length
Pred. No. 0;
0; Mismatches 154; Indels
                                                                                                                                                                                                                                                                                                                                                               linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Helicobacter felis
JP 2002355054-A/2
10-DEC-2002
16-JUL-2001 JP 2001214711
17-JUL-2000 EP 00202565.8
JOHANNES GERARDUS KUSTERS,GIOVANNI CATTOLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1. .2405
/organism="Helicobacter felis"
/mol type="genomic DNA"
/db_xref="taxon:214"
                                                                                                                                                                                                                                                                                                                                                               DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (1). .(681)
(692). .(2398).
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                               ď
                                                                                                                                                                                                                                                                                                                                                          BD185303 2405
Helicobacter felis vaccine.
BD185303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  atch 74.9%;
cal Similarity 93.6%;
2251; Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local S:
Matches 2251
                                                                                      2281
                                                                                                                               2499
                                                                                                                                                                       2341
                                                                                                                                                                                                                                                     2401
                                               2439
                                                                                                                                                                                                                2559
        2221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              source
                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                 RESULT 5
BD185303
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORIGIN
```

g

8

셤

ઠે

õ

PAT 13-FEB-2002

```
692. .2398

/ note="unnamed protein product"

/ codon start=1

/ transl_table=11

/ protein_id="cAD23258.1"

/ brotein_id="cAD23258.1"

/ brotein_id="cAD23258.1"

/ brotein_id="cAD23258.1"

/ db_xref="dl:18674029"

/ db_xref="dl:18674049"

/ db_x
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1. .681

/note="unnamed protein product"

/codon start=1

/transl_table=11

/protein_id="CAD23257.1"

/protein_id="CAD23257.1"

/db_xref="G1:18674024"

/translation="MKLTPPEQEKFLLYYAGEVARKRKAEGLKINQPEAIAYISAHIM

/pranslation="MKLTPREQEKFLLYYAGEVARKRKAEGLKINQPEAIAYISAHIM

/pranslation="MKLTPREQEKFLLYYAGEVARKRKAEGLKINQPEAIAYISAHIM

/pranslation="MKLTPREQEKFLLYYAGEVARKRKAEGLKINQPEAIAYISAHIM

/pranslation="MKLTPREQEKFURT" | pranslation="MKLTPREGET" | pranslation="MKTPREGET" |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                  GTGAAACTCACACCCAAAGAGCAAGAAAGTTCTTGTTATATTATGCGGGCGAAGTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGAAAGCGCAAAGCAGAGGGCTTAAAAGCTCAACCCGAAGCCATTGCTTACATTAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                         linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        154; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      . 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      felis"
                                                                                                                                                                                                                                                                                                         DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 2158.6; E
Pred. No. 0;
0; Mismatches 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1. .2405
/organism="Helicobacter fe
/mol_type="unassigned DNA"
/db_xref="taxon:214"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Kusters, J.G. and Cattoli, G.
Helicobacter felis vaccine
Patent: EP 1176192-A 4 30-JAN-2002;
Akzo Nobel N.V. (NL)
                                                                                                                                                                                                                                                                                                    AX356686 2405 bp
Sequence 4 from Patent BP1176192.
AX356686 AX356686.1 GI:18674023
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      74.9%;
93.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                               Helicobacter felis
Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AKSHGFIK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                           2610
                                                                                                                                                                           2405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                         ACAAT
                                                                                                                                                                             ACAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Simi
Matches 2251;
                                                                                                                           2606
                                                                                                                                                                             2401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                      ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                       RESULT 6
AX356686
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORIGIN
                       ò
                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 요
                                                            g
                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1920
                                                                                                                                                                                                                                                                                    GATCACTGCTTGAGCGTAGCAGATGAATACGATGTGCAAGTTTGTATCCACACGATAC 1440
                                                                                                                                                                                                                                                                                                                                                           1705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1825
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1885
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2485
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1765
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2160
CATCACTCCGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGCTGAAGAGTATTCTAT 1260
                                                                            1321 AGAAGCGGGGCGCGATTGGCTTTAAATTGCATGAAGACTGGGGCACAACACCAAGTGCGAT
                                                                                                                                                                                                                                                                                                                                                                                        GGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCGATGAACGGGCGCGCCCATCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGCCTACCACATTGAGGGGGGGGGGGGGGGGAGGACACTCACCTGATGTTATCACCATGGCAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CGAGCTCAATATTCTACCCTCCTCCACCACCCCCACTATTCCCTATAACGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TGCAGAACACTTAGACATGCTCATGACCTGCCACCACCTAGACAAACGCATCCGCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITACAATITICICAAAGCCGTAICCGCCCCCGGCTCTAICGCGCTGAAGAIGTGCTCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TCTCCAGTTTTCCCAAAGCCGTATCCGCCCCGGCTCTATTGCCGCTGAAGATGTGCTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGTGATTCCTAGAACTTGGCAAACTGCAGACAAGAATAAAAAAAGAATTTGGTAAGCTTCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CGCCGACTTGGTGGTGGGATCCTGCTTTCTTTGGTGTAAAACCCAAAATCGTGATCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGAAGCGGGCGCGATTGGTTTTAAATTGCATGAAGACTGGGGCACAACACCAAGTGCGAT
                                                                                                                                                                                                                                                         CGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCCAAGTTTGTATCCACACCGATAC
                                                                                                                                                                                                                                                                                                                                                           AGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATGAACGGGGGGGCGCCATCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TGCCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CGAGCTCAATATTCTACCCTCCTCCACCACCCCCCATTATTCCCTATACGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TGCAGAACACTTAGACATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGAAGATGGTGCAGATAATGACAACTTCCGCATCAAACGCTATATCTCCAAATACACCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGGCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCACTCCCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             <u> adecegnancerecretarancescearneracecetererereceaecetere</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2101 GCCGGTTTATTACCGCGAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CACTITIGITICCAAAGICGCCTAIGAAAIGGCGTGAAAGAAAAACIAGGCTTAGAGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TGAAGATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CAACCCCGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CACTITIGITITCCAAAGICGCCTAIGAAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAAAACGGCAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACT
  1201
                                                    1466
                                                                                                                                                        1526
                                                                                                                                                                                                                                                         1586
                                                                                                                                                                                                                                                                                                         1381
                                                                                                                                                                                                                                                                                                                                                           1646
                                                                                                                                                                                                                                                                                                                                                                                                             1441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1706
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1691
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1946
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1921
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1981
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2041
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1766
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2486
ద
                                            ઠ
                                                                                    g
                                                                                                                                                                                        g
                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            å
å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                      ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ∂
```

ö 265

Gaps

;

325 120

	1441 GGTCAATGAGGCAGGTATGTAGTAGACCCCTAAATGCGATGAACGGCCGCGCGCTTCA 1500 1706 TGCCTACCACATTGAGGGAGCGGAGGAGACCCCTACCTCGATGATTATCACCATGGCAGG 1765 1501 TGCCTACCACATTGAGGGAGCGGAGGAGCACCTCACCTGATGTTATCACCATGGCAGG 1765 1766 CGAGCTCAATATTCTACCCTCCTCCTCCACCACTATTCCCTATACGGT 1825 1166 CGAGCTCAATATTCTACCCTCCTCCACCACCACTATTCCCTATACCATTAATACGGT 1825 1167 CGAGCTCAATATTCTACCCTCCTCCACCACCACCACTATTCCCTATACAGGT 1825 11826 TGCAGAACACTTAGACATGCCTCCTCCACCACCACCACTAGACAAACGCATCAGGGA 1885	TTACAATTTCTCAAAGCTCTATCCCCCCCCCCTAGACAAACGCATCCGCGAGGA TTTACAATTTCTCAAAGCCGTATCCGCCCCCGGCTCTATCGCGGTGAAAACGCATCCGCGAGGA TTTACAATTTCTCAAAGCCGTATCCGCCCCCGGCTCTATTGCCGCTGAAGATGTGCTCCA TGATATGGGTGATCGATGACAAGCTCGGATTCGCAAGCAA	AGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAGAATTTGGTAAGCTTCC AGTGATTCCTAGAACTTGGCAACTGCGGACAAGAATAAAAAGAATTTGGTAAGCTTCC TGAAGATGCCTAGAACTTGGCAACTGCAGACAAGAATAAAAAAAA	1921 TAATCCCGCTTTGACCCATGGCGTGACTATCGGCTCTGTGGGTGAGAGAGA	ACCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCGGCATCACGGCTTATTATTACCGCGAAATGTTTGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACGGCAAGGCGAAATTTGACACCAGCATCACGGCAAGGCGAAATTTGACACCATTGAAAATGGCGTGAAAGGAAAATGGCGTGAAAGAAA	2426 CCAAGTTCTACGGTCAAAACTGCCGTAACATCACCAAGAAAGA
8 8 8 8 8 8 8	8 8 8 8 8 8	8 6 8 6 8	6 6 6 6	8 6 8 6 8	8 8 8 8	o a o
	580 CTCAACGCGGTAAGGAAGTTACCGAGCTTACCAACGAAGGACCTAAATCCTTG 523 361 CTCAACGCGGGTAAGGAAGTTACCGAGCTTGAAGTTACCAACGAAGGACCTAAATCCTTG 420 626 CATGTGGGTAAGCATTTCCACTTCTTTGAAGCTAACAAGGACTAAAATCGATCG	746 CAAACCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAGTGATTGGCATGAAC 805	TCTCACGGATTCATCAAGTAAGAGACTCCCATGAAAATGAAAAACAAGAGTATGTAAA TACCTACGGACCCCACCAAAGGCGATAAAGGCGAGATACGTAAA TACCTACGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCGCGAGA CACCTACGGACCCACCACAGGCGATAAAGTGCGCTTAAGAGATACCGATCTTTTGGGCGAGA AGTAGAACATGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGCGGGTAAAACTAT AGTAGAACATGACTATACCACCTATTGGCGAAGAACTCAATTTGGCGCGGGTAAAAACTAT AGTAGAACATGACTAATACCACCTTATGGCGAAGAGCTCAAATTTGGCGCGGGTAAAAACTAT	1046 CCGTGAGGGTATGGGCAGAGGAATAGCCCTGATGAAACACCCTAGATTTAGTCATCAC 1105 841 CCGTGAGGGTATGGGTAATAGCCCTGAATGAAACACCTTAGATTTAGTCATCAC 900 1106 TAACGCGATGATTATCGACTACACGGGATTTACAAAGCCCGACATTGGGATTAAAAACGG 1165	CAAAATCCATGGTATTGGCAAGGCGGGAACAAGACATGCAAGATGGCGTAAGCCTCA TATGGTCGTGGGCTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGG TATGGTCGTGGGTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGG TATGGTCGTGGGTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGG GGGAATCGATTCACACACCCACTTCTCTCCACAACAATTCCCTACCGCTAGCAA	1346 TAGGGTTACAACCATGTTTGGAGGGGGGCACAGGTTCCTACCGGTCTAGGCAA 1140 1346 TGGGGTTACAACCATGTTTGGAGGGGGGCACAGGTCCTGTACATGGCACAGGTCCTAGGGACTAC 1405 1141 TGGTGTTACAACCATGTTTGGAGGTGGCACAGGTCCGGTAGATGGCACGACGACCAC 1200 1406 TATCACTCCGGGCAAATGGAAATTGCACCGCATGTTGCGCGCAGCAGGAATGCTAT 1465

361

301

625

421

685

481

745

541

802

601

865

661

```
GAATGTGGGCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAACAACTTGTAGAACAAGT 1525
                                                                                                                                                                     GGGAATCGATTCACACACCCACTTCTTCTCCACAACAATTCCCTACCGCTCTAGCCAA
                                                                                       GAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTTGGTTGCGATAAAGACATCGAG
                                                                                                                                                                                                                                                                                                   CATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCACTAAAATTCGATCGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                         AAAGCCTATGGCAAACGCCTAGATATCCCTCTGGCAACACGCTACGCATGGGGCAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          rcrcacggarttarcaaaraaggagacrcccargaaaaagaaaaaagagrargraaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               722 TACCTACGGACCTACCACAGGCGACAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CCGTGAGGGCATGGGTCAGAGCAATAGTCCAGATGAAAACACCCCTAGATTTAGTCATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CAACGCGATGATTATTGACTACACCGGGATTTACAAAGCCGACATTGGCATTAAAAATGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CAAAATCCATGGCATTGGCAAGGCAGGAACAAGGACATGCAAGATGGCGTAAGCCCTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TGGCGTTACAACCATGTTTGGAGGCGCACAGGTCCTGTAGATGGCACGAATGCGACTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TGTATGCACTTTTTGAAAAAAGACGAGGTGTGCCCGGTGTGGGGAATATGGTCCCTGAT
                                                             CTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTGTGAATTGGCCCATC
                                                                                                                                                                                                                                                                                                                                            carcreceracearrecacrrerresadecaacaacearresaarrecareceaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAAACCCGTAAAGTGCAGTTAATCCCTCTTGGCGGCAGTAAAAAAGTGATTGGCATGAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TACCTACGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGTAGAACATGACTATACCACCTATGGCGAAGAACTTAAAATTTGGCGCGGGTAAAACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         782 AGTAGAACATGACTATACCACTTATGGCGAAGAGCTCAAATTTGGCGGGGGTAAAACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CCGTGAGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TAACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CAAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGGTGGGGTAAGCCTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TATGGTCGTGGGGTGTGGGCACACAGAGCACTAGCAGGGGAAGGTATGATTATTACCGCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAGGGCCTAAATCCTTG
                                                                                                                                                                                                                                                                                                                                                                                   AAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATTGGGGCAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                              CAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAAGTGATTGGCATGAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGGCTTGTGAATAACATCGCGGATGAACGCCCATAAACATAAAGCGCTTGACAAGGCGAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         662
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         842
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1406
                                                                 446
                                                                                                     242
                                                                                                                                            909
                                                                                                                                                                                   302
                                                                                                                                                                                                                          999
                                                                                                                                                                                                                                                                 362
                                                                                                                                                                                                                                                                                                       626
                                                                                                                                                                                                                                                                                                                                              422
                                                                                                                                                                                                                                                                                                                                                                                     989
                                                                                                                                                                                                                                                                                                                                                                                                                          482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                746
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              908
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         926
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      902
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    962
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1022
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1082
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1466
                                                                                                                                                                         셤
                                                                                                                                                                                                                                                    8 &
                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8 & 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8 6 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8 A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                          원 상
                                                                                         셤
                                                                                                                              જે
                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            જે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                            Helicobacter felis
Helicobacter felis
Helicobacter felis
Bacterai, Protecobacteria, Epsilonproteobacteria, Campylobacterales,
Helicobacteraceae, Helicobacter.
1 (bases 1 to 2407)
Kusters, J.G. and Cattoli, G.
Helicobacter felis vaccini Pelis vaccin
Patent: JP 2002155054-A 4 10-DEC-2002;
                                                                                   2400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DESCRIPTION OF THE STATE OF THE
        CAAGACGGCGCATATCACTGTCGATCCTAAAACCTTCGAGGTCTTTGTAGATGGCAAACT 2340
                                                                                                                                                                                                                                                                   17-JUN-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Я
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGAAAGCGCAAAGCAGAGGGCTTAAAGCTCAACCAACCCGAAGCCATTGCTTACATTAGT 325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGAAAGCGCAAAGCGGAGGGCTTAAAGCTCAACCAACCGGAAGCCATTGCCTACATTAGT 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   326 GCCCATATTATGGACGAAGCGCGCGTGGAAAAAAAACCGTTGCCCAGCTTATGGAAGAG 385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCCCATATTATGGACGACGCCCCGTGCCAAAAAGACGTTGCGGAACTTATGGAAGAG 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A61K39/23,
PC A61K39/235, A61K39/39, A61K39/395, A61P1/04, A61P31/04, C12N1/15,
PC C12N1/19,
PC
C12N1/21, C12N5/10, C12N9/80, C12Q1/68, G01N33/15, G01N33/50, G01N33/P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PC
G01N33/53,G01N33/566,G01N33/569//(C12N9/80,C12R1:01),(C12Q1/68,
                                            206 GTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATTTATGCGGGCGAAGTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GTGAAACTCACCCCAAAAAGACAAGAAAAGTTCTTGTTATTTTTTGCGGGGGAAGTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0; Gaps
                                                                                                                                                                                                                                                                     PAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 2407;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 2158.6; DB 6; Length
Pred. No. 0;
0; Mismatches 155; Indels
                                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers

Location/Qualifiers

1. 2407

/organism="Helicobacter felis"
/mol type="genomic DNA"
/db_xref="taxon:214"
                                                                                                                                                                                                                                                                     DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    C12N15/00,C12N5/00,A61K37/02
Helicobacter felis vaccine
                                                                                                                                                                                                                                                              2407 bp Helicobacter felis vaccine.
                                                                                                                                                                                                                                                                                                                          BD185305.1 GI:31877505
JP 2002355054-A/4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           74.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches 2251; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NOBEL NV
                                                                                                                          2606 ACAAT 2610
                                                                                                                                                                 2401 ACAAT 2405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C12R1:01)
PC C12N1:
CC Helico
FH Key
FT CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AKZO
          2281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                          RESULT 7
BD185305
LOCUS
DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               source
                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORIGIN
        셤
                                            Š
                                                                         g
                                                                                                              ઠે
                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  음 강
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
```

1045

985

781

925

721

1105

1165

901

1225 1021 1285 1081 1345

a B 8 8 8

음 장

ठ

g

g ð a ò g ò g ð 셤 ò g ò ద ò g à g δ 염 장

ò

```
/transl_table=11
/protein_id="(CAD23262.1"
/bransl_table=11
/protein_id="(CAD23262.1"
/db_xref="d1:18674031"
/db_xref="d1:18674031"
/db_xref="d1:18674031"
/db_xref="d1:18674031"
/db_xref="d1:18674031"
/db_xref="MGWKGEYVNTYGPTTGDKVRLGDTDLWAEVEHDYTTYGEELKF
GAGKTIREGGGGNSPDENTLDLV1TNAMIIDYTGLEACHLGIGKGRIGGT
GAGGGSPHWYGYGTEBLAGEGRIITAGGIDSHTHFLSPQGPPTALANGYTTHFGGGT
GPVDGTNATTITPGKWNLHRMLRAAEEYSMNVGFLGKGNSSSKKQLVEQIEACAIGFK
LHEDWGTTPSALDLDLCLSVADEYDVQVCIHTDYVNEACYDDTLAMMGRAIHAYHIEG
AGGGHSPDVTTWAGELAILESSTTPTIPYTUARAGEVYDDTLAMMGRAIHAYHIEG
AGGGHSPDVTTWAGELAILESSTTPTIPYTUACAGEVIPRTWQTADKNKKEFGKLPED
SADNINFRIKKYISKYTINPALTHGYSEY IGSVEGGKIADLVWWNPAFFGVKCKIVIK
GGMVVPSEMGDSNASVPTPQPVYREMFGHHGKAKFPDTSITFVSKVAYENGVKEKLGL
ERKVLPVKNCRNIITKKDFKENNKTAHITVDFKTFEVFVDGKLCTSKFASEVPLAQRYT
FF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon gtart=1
/transl_table=11
/protein_id="CAD33261.1"
/db_xref="G1:18674030"
/db_xref="G1:18674030"
/translation="WKLTPKEGEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIM
DEARRGKKTVAELMEECMHFLKEGEWPEGYGNWPDDLGVEAFPDGTKLVTVNWPIED
DEBRRGKKTVAELMEECMFLKEGVEYMPGYGNWYPDLGVEAFPDGTKLVTVNWPIED
DEBRRGKKEGODD. BELNAGKEVTELEVTNEGPKSLHVGSHPFPEANKALKFDRE
KAYGKRLDIPSGNTLRIGAGGTRKVQLIPLGGSKKVIGMNGLNNIADBERHKHKALEK
                                                                                                                                                                                                                                                                        Helicobacter felis
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                         PAT 13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               266 AGAAAGCGCAAAGCAGAGGGCTTAAAGCTCAACCAACCCGAAGCCATTGCTTACATTAGT 325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCCCATATTATGGACGAAGCGCCGTGGAAAAAAAACCGTTGCCCAGCTTATGGAAGAG 385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GTGAAACTCACACCCAAAGAGAAAAGTTCTTGTTATATTTATGCGGGCGAAGTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GTGAAACTCACACCCAAAGAGCAAGAAAGTTCTTGTTATTATGCGGGCGAAGTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6; Length 2407;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                         linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                155;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    'note="unnamed protein product"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                693 .2399
/note="unnamed protein product"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        felis"
                                                                                                                                                         DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred. No. 0;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                  Rusters,J.G. and Cattoli,G.
Helicobacter fells vaccine
Patent: EP 1176192-A 10 30-JAN-2002;
Akzo Nobel N.V. (N.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       74.9%; Score 2158.6; 93.6%; Pred. No. 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /mol_type="unassigned DNA"
/db_xref="taxon:214"
2. _682
                                                                                                                                                         2407 bp
EP1176192.
                                                                                                                                                                                                                                                                                                                                                                                                                                                          1. .z4u./
/organism="Helicobacter
                                                                                                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
                                                                                                                                                       AX356692
Sequence 10 from Patent
AX356692
AX356692.1 GI:18674029
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /codon_start=1
/transl_table=1
                                                                                                                                                                                                                                                      Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity 93.6
Matches 2251; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AKSHGF1K'
                                                          2402 NCAATG 2407
                    2606 ACAATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                         ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                       source
                                                                                                                                                       LOCUS
                                                                                                                                                                                                                                                                                                                                REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                 RESULT 8
AX356692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DRIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                    8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                     1825
                                                                                                                                                                                                                                                                                                                                                                                                                                 1885
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1945
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2041
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2605
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2401
                                                                                                                                                                                                                                                                                                                                                                                           1621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1921
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1981
                                                                                                                 CGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATAC 1645
                                                                                                                                       CGATCACTGCTTGAGCGTAGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATAC 1441
                                                                                                                                                                                             AGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATGAACGGGCGCGCCATCCA 1705
                                                                                                                                                                                                                 TGCCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGG 1765
                                                                                                                                                                                                                                                                                                  TITACAATITITCCCAAAGCCGTATCCGCCCCGGCTCTATCGCCCGCTGAAGATGTGCTCCA 1741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2485
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2281
                                                          GAATGTGGGCTTTTTGGGCAAAGGCAATAGCTCCAGTAAAAAACAACTTGTAGAACAAAT 1321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITACAATITICICAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTCCTCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CGCTGATTTGGTGGTGTGGAATCCTGCCTTTTTTTGGTGTGAAACCTAAGATTGTGATCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGGCGGTATGGTGGTTTCTCTGAAATGGGGGACTCCAACGCGTCCGTGCCTACACCCCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CAAGGIGCTACCCGIGAAAAACIGCCGCAACAICACTAAGAAAGACTTCAAATTCAACAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TGAAGATAGTGCAGATAACGACAACTTCCGTATCAAACGCTACATCTCCAAATACACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1922 TAACCCCCCTCTAACCCATGGGGTAAGCGAGTATATCGGCTCTGTGGAAGGGGCAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CCAAGTTCTACCGGTCAAAAACTGCCGTAACATCACCAAGAAGACTTCAAGTTCAACGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CAAAACGGCAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CTGCACCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTGCACCTCTAAACCCGCCTCTGAAGTGCCTCTAGCCCAGCGCTACACTTTCTTCTAGGC
                                                                                                                                                                                                                                                                                                                                                     CGAGCTCAATATTCTACCCTCCTCCACCACCCCCCTATTCCCTATACCATTAATACGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                     TGCAGAACACTTAGACATGCTCATGACCTGCCACCTAGATAAACGCATCCGCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGATATGGGTGTGATCGCGATGACAAGCTCGGAAGCAATGGGGCGTGCAGGCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CAACCCCGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CGCCGACTTGGTGGTGTGGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGGCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCACTCCCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCAT
                                                                                                                                                                                                                                                                                                                                                                       TGCAGAACACTTAGACATGCTCATGACATGCCACCCCCCTAGACAAACGCATCCGCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGAAGATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTAT
                                      AGAAGCGGGCGCGATTGGTTTTAAATTGCATGAAGACTGGGGCACAACACCAAGTGCGAT
                                                                                                                                                                                               1646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1946
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1742
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1802
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1862
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1982
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2042
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2342
                                                                            1322
                                                                                                                 1586
                                                                                                                                                       1382
                                                                                                                                                                                                                                  1442
                                                                                                                                                                                                                                                                        1706
                                                                                                                                                                                                                                                                                                                                                     1766
                                                                                                                                                                                                                                                                                                                                                                                         1562
                                                                                                                                                                                                                                                                                                                                                                                                                                 1826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1682
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2366
1262
                                                                                                                                                                                                                                                                                                              1502
                                      1526
```

8 6 8 6 8 6 8

Tue

\$ B \$ B \$ B \$ B

유 장

ద

g ò

```
1045
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1525
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CAAAATCCATGGTATTGGCAAGGCGGGGAACAAAGACATGCAAGAAGATGGCGTAAGCCCTCA 1022
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TATGGTCGTGGGTGTGGGCACAGAAGCACTAGCAGGGGAAAGGTATGATTATTACCGCTGG 1285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TGGCGTTACAACCATGTTTGGAGGCGGCACAGGTCCTGTAGATGGCACGAATGCGACTAC 1405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGAAGCGGGCGCGATTGGTTTTAAATTGCATGAAGACTGGGGCACAACACCAAGTGCGAT 1585
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    902
                                                                                                                                                                                                                                                                                                                                                                                                                                     722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         842
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               962
                302
                                                                          362
                                                                                                     625
                                                                                                                                   422
                                                                                                                                                                  685
                                                                                                                                                                                              482
                                                                                                                                                                                                                           745
                                                                                                                                                                                                                                                        542
                                                                                                                                                                                                                                                                                      805
                                                                                                                                                                                                                                                                                                                602
                                                                                                                                                                                                                                                                                                                                               865
                                                                                                                                                                                                                                                                                                                                                                           662
                                                                                                                                                                                                                                                                                                                                                                                                         925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    985
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 243 TTGGGCGTAGAAGCCACTTTCCCCGATGGCACCAAACTCGTAAACCGTGAATTGGCCCATT
                                                             303 GAACCTGATGAACACTTTAAAGCCGGTGAAAGTTTGGCTGTGATAAAGACATTGAG
                                                                                                                        CTCAACGTGGGTAAGGAAGTTACCGAGCTTGAAGTTACCAACGAAGGACCTAAATCCTTG
                                                                                                                                                                                                                                                                                                       CAAACCCGTAAAGTGCAGTTAATCCCTCTTGGCGGTAGTAAAAAAGGTGATTGGCATGAAC
                                                                                                                                                                                                                                                                                                                                               GGGCTTGTGAATAACATCGCGGATGAACGCCATAAACATAAAGCGCTTGACAAGGCGAAA
                                                                                                                                                                                                                                                                                                                                                                                                                          723 CACCTACGGACCCACACAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             843 CCGTGAGGGTATGGGTCAGAGCAATAGCCCAGATGAAAACACCTTAGATTTAGTGATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  903 CAACGCGATGATTATCGACTACACCGGGATTTATAAAGCCGACATTGGTATTAAAAATGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TATGGTCGTGGGTGTGGGCACAGAAGCACTAGCAGGGGAAGGTATGATTATTACCGCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GGGAATCGATTCACACACCCCTTTCTCCCACAACAATTCCCTACCGCTTAGCCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TGGTGTTACAACCATGTTTGGAGGTGGCACAGGTCCGGTAGATGGCACGAATGCGACCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TATCACTCCGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTATTCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAGGGCCTAAATCCTTG
                                                                                                                                                                   CATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCACTAAAATTCGATCGTGAA
                                                                                                                                                                                   CATGTGGGTAGCCATTTCCACTTCTTTGAAACCAAGGCATTGAAATTCGATCGGGAA
                                                                                                                                                                                                                                            AAAGCCTATGGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATTGGGGCAGGA
                                                                                                                                                                                                                                                                                      CAAACCCGCAAAGTGCAGTTGATTCCTTTGGTGGCAGTAAAAAAGTGATTGGCATGAAC
                                                                                                                                                                                                                                                                                                                                                                            603 GGGCTTGTGAATAATATTGCGGACGACGCCATAAACACAAAGCACTAGACAAGGCAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGTAGAACATGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGCGGGTAAAACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1046 CCGTGAGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1106 TAACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CAAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GAATGTAGGCTTTTTGGGCAAAGGCAATAGTTCTAGCAAAAAAACAACTTGTAGAACAAGT
                                              GAACCAGATGAGCACTTCAAAGCGGGGGAAGTGAAATTTGGTTGCGATAAAGACATCGAG
                                                                                                                                                                                                                            AAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATTGGGGCAGGA
                                                                                                                                                                                                                                                                                                                                                                                                         TACCTACGGACCCACCAAAGGCGGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1203
                                              206
                                                                                                       999
                                                                                                                                                                                                                           . 989
                                                                                                                                                                                                                                                        483
                                                                                                                                                                                                                                                                                                                   543
                                                                                                                                                                                                                                                                                                                                                908
                                                                                                                                                                                                                                                                                                                                                                                                                                       663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    926
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           963
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1023
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1083
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1526
                                                                                                                                    363
                                                                                                                                                                  626
                                                                                                                                                                                              423
                                                                                                                                                                                                                                                                                      746
                                                                                                                                                                                                                                                                                                                                                                                                           998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               986
                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                           ద
                                                                                                                                                                                                                                                                                                                                                                         ద
                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                              g
                                                                                                                                                                ઠે
                                                                                                                                                                                          셤
                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ठे
                                            ð
                                                                   유
                                                                                                       ò
                                                                                                                                                                         BD185304.1 GI:31877504
JP 200235554-A/3.
Helicobacter felis
Helicobacter felis
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.

I (bases 1 to 2183)
Kusters,J.G. and Cattoli,G.
Helicobacter felis vaccine
Patent: JP 2002355054-A 3 10-DEC-2002;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ô
                                                                                                                                      PAT 17-JUN-2003
 2342 CTGCACCTCTAAACCCGCCTCTGAAGTGCCTCTAGCCCAGCGCTACACTTTCTTAGGC 2401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCCCATATTATGGACGAGGCGCGCGTGGCAAAAAAACCGTTGCTGAACTTATGGAAGAA 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTGTGAATTGGCCCATC 505
                                                                                                                                                                                                                                                                                                                                                                                                                                                   C12N15/09, A61K38/00, A61K39/106, A61K39/118, A61K39/12, A61K39/175, PC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A61K39/235, A61K39/39, A61K39/395, A61P1/04, A61P31/04, C12N1/15,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    G01N33/53,G01N33/566,G01N33/569/(C12N9/80,C12R1:01),(C12Q1/68,
C12R1:01),
PC C12N15/00,C12N5/00,A61K37/02
CC Helicobacter fells vaccine
FH Key
FT CDS (3). (681).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PC
C12N1/21,C12N5/10,C12N9/80,C12Q1/68,G01N33/15,G01N33/50,G01N33/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGAAAGCGCAAAGCAGAGGGCTTAAAGCTCAACCAACCGAAGCCATTGCTTACATTAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCCCATATTATGGACGAAGCGCCGTGGAAAAAAAAACCGTTGCCCAGCTTATGGAAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGTATGCACTTTTTGAAAAAGATGAGGTGATGCCCGGTGTGGGGAATATGGTCCCTGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GTGAAACTCACACCCAAAGAGAAGAGATCTTGTTATATTATGGGGGGGAAGTTGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 2183;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                    linear
                                                                                                                                                                                                                                                                                                                                                                                                                      JOHANNES GERARDUS KUSTERS, GIOVANNI CATTOLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0; Mismatches 145;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1. .2183 Helicobacter felis"
/organism="Helicobacter felis"
/mol_type="genomic DNA"
/db_xref="taxon:214"
                                                                                                                                      DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (683)
(694). (683)
(694). (2181).
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   67.6%; Score 1948;
llarity 93.3%; Pred. No. 0;
Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                            Helicobacter felis
JP 200235554-A/3
10-DEC-2002
16-UUL-2001 BP 2001214711
17-JUL-2000 BP 00202565.8
                                                                                                                                 2183 bp
Helicobacter felis vaccine.
BD185304
                              2606 ACAATG 2611
                                                          2402 NCAATG 2407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local Similarity
nes 2035; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A61K39/23
                                                                                                                                                                                                                                                                                                                                               ٣
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                source
                                                                                                     RESULT 9
BD185304
LOCUS
DEFINITION
ACCESSION
KEXWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Loca
Matches
                                                                                                                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                     REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURES
                                                                                                                                                                                                                                                                                                                                             COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DRIGIN
```

q ò 임 δ g ò g ð

ò

ò a ò g \$ B \$

qq

8 8 8

a ઠે 8 & g ò g ð a 8 g ò 셤 ઠ 셤 ò 원

```
3. ..683
/note="unnamed protein product"
/codon_start=1
/transl_table=11
/protein_id="CAD23259.1"
/protein_id="CAD23259.1"
/db xref="G1:1867407"
/db xref=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          / LIGHDS_CALLS_INCOLING
/ PROTECTION TO ALL TO ALL TO ALL TO ALL TO ALL THE ALL DE ALL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCCCATATTATGGACGAGCGCCCGTGGAAAAAAAACCGTTGCCCAGCTTATGGAAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATTATGCGGGCGAAGTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGAAAGCGCAAAGCAGAGGGCTTAAAGCTCAATCAACCCGAAGCCATTGCCTACATTAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTGTGAATTGGCCCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Tredeceracia de la recensión de
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTTTGGTTGCGATAAAGACATCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GAACCTGATGAACACTTTAAAGCCGGTGAAGTGAAATTTGGCTGTGATAAAGACATTGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAGGGCCTAAATCCTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCACTAAAATTCGATCGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATTATGCGGGCGAAGTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 1948; DB 6;
Pred. No. 0;
); Mismatches 145;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   694. .>2181
/note="unnamed protein product"
EP 1176192-A 7 30-JAN-2002; oel N.V. (NL)
Location/Qualifiers
                                                                                                                                                                /organism="Helicobacter fe
/mol_type="unassigned DNA"
/db_xref="taxon:214"
3. .683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=1/transl_table=:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               67.6%;
93.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match 67.6
Best Local Similarity 93.3
Matches 2035, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AKSHGFIK
                                            Akzo Nobel
        Patent:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        m
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         363
                                                                                                                                source
    JOURNAL
                                                                                        FEATURES
                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           영 장
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8 G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8 8 8
                                                                                                                                                                                                                                                                 1705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1825
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGCCTACCACATTGAGGGGGGGGGGGGGACACTCACCTGATGTTATCACCATGGCAGG 1562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1885
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2305
        AGAAGCGGGCGCGATTGGCTTTAAATTGCATGAAGACTGGGGCACAACACCAAGTGCGAT 1382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13-FEB-2002
                                                                                                                                     CGATCACTGCTTGAGCGTGGCAATGAATACGATGTGCAAGTTTGTATCCACACGATAC
                                                                                                                                                                                                                                                                                                                       CGAGCTCAATATTCTACCCTCCTCCACCACCCCCACTATTCCCTATAACATACGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTTACAATTTTCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTTACAATTTTCTCAAAGCCGTATCCGCCCCGGATCTATTGCCGCTGAGGATGTGCCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TAATCCCGCTTTGACCCATGGCGTGGGGTATATCGGCTCTGTGGAAGAGGGGCAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TGCCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CGAGCTCAATATTCTACCCTCCTCCACCACCCCCACTATTCCCTATACCATTAATACGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TGCAGAACACTTAGACATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TGAAGATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CAACCCCGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CGCCGACTTGGTGGGAATCCTGCCTTTTTGGCGTAAAACCCAAAATCGTGATCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         cecceactricerecretedantecretecritririrecectraaaactraagarretea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGCCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCACTCCCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Agenegcanegreercricheaaaregecgaricraacecgreegreerecaecerea
                                                                                                                                                                                                                                                             AGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATGAACGGGCGCGCCCATCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AX356689 2183 bp
Sequence 7 from Patent EP1176192.
AX356689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CACTITICGIGICICAAGCG 2182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Helicobacter felis
Helicobacter felis
Bacteria, Proteobacteria,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AX356689.1 GI:18674026
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CACTTTTGTTTCCAAAGTCG
                                                                                             1586
                                                                                                                                                                             1383
                                                                                                                                                                                                                                                                 1646
                                                                                                                                                                                                                                                                                                                                                                                                                                      1706
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1766
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1563
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1623
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1946
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1743
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1803
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1923
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 10
AX356689
LOCUS
DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
```

265

Gaps

;

Length 2183; Indels 62

325 122 385 445 242 505 302 565 362 625 422 685 482 745

AAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATTGGGGCCAGGA

989

423

셤 8

Epsilonproteobacteria; Campylobacterales;

Helicobacteraceae; Helicobacter.

Kusters, J.G. and Cattoli, G. Helicobacter felis vaccine

AUTHORS TITLE REFERENCE

g & g

g y

8 8 ò

ga Y

g

ò

장 음 장

g

ò

8 6

ò d

중 점

8 8 8 8 8 8

8 6 B

g

8 6

```
DNA Seq. 13 (6), 321-331 (2002)
12652903
2 (Dases 1 to 8406)
2 Masses 1 to 8406)
2 Library and Chang, Y.F.
Direct Submission
Submitted (21-DEC-2000) Population Medicine and Diagnostic Science, College of Veterinary Medicine, Cornell University, Tower Road, Ithaca, NY 14853, USA
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AF330621 B406 bp DNA linear BCT 13-MAY-2003 Helicobacter bizzozeronii tRNA ribosyltransferase gene, partial cds; GidB, complete cds; urease gene cluster, complete sequence and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Helicobacter bizzozeronii
Helicobacter bizzozeronii
Bacteria, Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
I (bases I to 8406)
C F. Chang, C.D., Simpson, K.W., Wei, C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Zhu, J., Teng, C.H., Chang, C.F., Chang, C.D., Simpson, K.W., Wei, C., McDonough, P., McDonough, S. and Chang, Y.F. Cloning and characterization of a Helicobacter bizzozeronii urease
                 CGCCGACTTGGTGGTGTGTGTGTGCTTTTTTTGGCGTGAAACCTAAGATTGTGATTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2306 ACCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2103 GCCGGTTTATTACCGCGAAATGTTTGGGCACCACGGCAAAGGCGAAATTTGACACCCGCGAT
                                                                                                         TITACAATTITCTCAAAGCCGTATCCGCCCCGGATCTATTGCCGCTGAGGATGTGCTCA
                                                                                                                                                                           TGAAGATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTAT
                                                                                                                                                                                                                                                                                                                                                                  CAACCCCGCTTTGACCCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCCAAGAT
                                                                                                                                                                                                                                                                                                                                                                                    CGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGGCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCACTCCCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Agendecandencentrancheaangescannancescentecenescences
                                                                                     TITACAATITICICAAAGCCGIATCCGCCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCA
                                                                                                                                                        <u> AGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCC</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1..8406
/organism="Helicobacter bizzozeronii"
/mol_type="genomic DNA"
/db_xref="taxon:56817"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CACTITICGIGICAAGCG 2182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CACTITIGITICCAAAGICG 2385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      unknown gene.
AF330621
AF330621.1 GI:27462193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2043
                                                                                                                      1683
                                                                                                                                                         1946
                                                                                                                                                                                           1743
                                                                                                                                                                                                                             2006
                                                                                                                                                                                                                                                              1803
                                                                                                                                                                                                                                                                                                2066
                                                                                                                                                                                                                                                                                                                                  1863
                                                                                                                                                                                                                                                                                                                                                                  2126
                                                                                                                                                                                                                                                                                                                                                                                                                                      2186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 11
AF330621
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE
                                                                                                           임
                                                                                                                                                                                  g
                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                            8 &
                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                             요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                   8 6
                                                                                    ò
                                                                                                                                                        ઠ
                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1465
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1525
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1322
                                                                                                                                                                                                                                                                                                                1045
                                                                                                                                                                                                                                                                                                                                                                                    1105
                                                                                                                                                                                                                                                                                                                                                                                                                                                        1165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1586 CGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATAC 1645
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1646 AGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATGAACGGGCGCCCATCCA 1705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TGCCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGG 1765
                                                                                                                                                                                                                                                                                                                                                  842
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        962
                                                                                                       865
                                                                                                                                         662
                                                                                                                                                                           925
                                                                                                                                                                                                                                              985
                                                                                                                                                                                                                                                                                782
 542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TATGGTCGTGGGTGTGGGGCACAGAAGCACTAGCAGGGGAAGGTATGATTACCGCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACCCGATAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGTAGAACATGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGCGGGGTAAAACTAT
                                                                                                                                                                                                                                                                                                                                                                                  CCGTGAGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CAAAATCCATGGTATTGGCAAGGCGGGGAACAAAGACATGCAAGATGGCGTAAGCCCTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1143 TGGTGTTACAACCATGTTTGGAGGTGGCACAGGTCCGGTAGATGGCACGAATGCGACCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1263 GAATGTAGGCTTTTTGGGCAAAGGCAATAGTTCTAGCAAAAAACAACTTGTAGAACAAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CGAGCTCAATATTCTACCCTCCTCCACCACCCCCACTATTCCCTATACGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CAAACCCGTAAAGTGCAGTTAATCCCTCTTGGCGGTAGTAAAAAAGTGATTGGCATGAAC
                                                                                                                         GGGCTTGTGAATAATATTGCGGACGAACGCCATAAACACACAAAGCCCTAGAAAAA
                                                                                                                                                                                               TCTCACGGATTCATCAAGAAGAGAGACTCCCCATGAAAAATGAAAAAACAAGAGTATGTAAA
                                                                                                                                                                                                                                            TACCTACGGACCCACCAAAGGCGGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGA
                                                                                                                                                                                                                                                               CACCTAGGACCCACCACCACCAGGGGATAAAGTGCGCTTAGGAATACGGATCTTTGGGCAGA
                                                                                                                                                                                                                                                                                                                                       AGTAGAACATGACTATACCACTTATGGCGAAGAGCTCAAATTTGGCGCGGGTAAAACTAT
                                                                                                                                                                                                                                                                                                                                                                                                      CCGTGAGGGTATGGGTCAGAGCAATAGCCCAGATGAAAACACCTTAGATTTAGTGATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                      TAACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CAAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGGAATCGATTCACACCCCACTTCCTTTCTCCACAACAATTCCCTACCGCTCTAGCCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TGGCGTTACAACCATGTTTGGAGGCGGCACAGGTCCTGTAGATGGCACGAATGCGACTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GAATGTGGGCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAAAACAACTTGTAGAACAAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGAAGCGGCGCGATTGGTTTTAAATTGCATGAAGACTGGGGCACAACACCAAGTGCGAT
 AAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATTGGGGCAGGA
                                                                                                       GGGCTTGTGAATAACATCGCGGATGAACGCCATAAACATAAAGCGCTTGACAAGGCGGAAA
                                                                                                                                                                          TATGGTCGTGGGGTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGG
                                  CAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAAGTGATTGGCATGAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1706
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1766
                                                                                                                                                                                                                                                                                                                                                                                  1046
                                                                                                                                                                                                                                                                                                                                                                                                                                                      1106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1023
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1083
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1383
                                                                    543
                                                                                                    908
                                                                                                                                      603
                                                                                                                                                                                                          663
                                                                                                                                                                                                                                            956
                                                                                                                                                                                                                                                                              723
                                                                                                                                                                                                                                                                                                                986
                                                                                                                                                                                                                                                                                                                                                783
                                                                                                                                                                                                                                                                                                                                                                                                                    843
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            963
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1226
                                   746
                                                                                                                                                                          998
483
```

2305

2365

SGO

```
/trānslation="MLAESVLGNLKEGGSSKELDFIDLEWFDAQKRMGRFTSQKGAEL
VLKJKNPPRKGLCDGDILFEDATSLIAINIIPTPTLHYYADSTAQVARLCYBVGNRHA
SLYYGDSPLSFKTPPERPLQVLFDKLALRYEVLKSKLDASQRISVSAPHADFLQEGGSA
PLKFKGSALDLQIVIKK"
                                                                                                                                                                                                                                  /protein id="AAO15377.1"

/db xref="G1:27462201"

/translation="MOKDFLLLQVNDAMFPIGSYTHSFGLETYIQHKEVSSKESALDY

/translation="MOKDFLLLQVNDAMFPIGSYTHSFGLETYIQHKEVSSKESALDY

/translation="MOKDFLLLQVNDAMFPIGSYTHSFGLETYIQHKEVSKESALDY

FLKTIGYLDLPLSAFERDYMOKSYTPFHASAYGVFCACLGLGLEASIGHYLYAQSSNM

VINCYKTIFLAQNDGQRILLALQETFTTLLVTLEGLDASYLCAASIQNDIKAMQHEHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /translation="MAYOHPTSYAQAFRLYLRTKIGQNGKCVIADNYFSPPFKLMPPFYERGANARIILIAVSPGMLKGDAQBIQMDIGBNCQLELSFQSFBKIQDTBGGYATRNYQILIFPWALLDBSBLDIPPNAHFWNHSHIVLHKNAQLLYFSTITAGRIAMGERAFHFHINGTRIKISTOGGGSLASVFLDNTILEPASMDLKNPCMFGNYTHYLNGIFLTRLLKLEDLLESTQINAGVSLLPTRLPEGYHSLCLKALANGSEPLLALRKSISNLLVBRME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /traislation="MVKIGVCGPVGSGKTALIEALTRAMSQQYSIGVITNDIYTKEDA
EFLCRNSVMPRERIIGVETGGCPHTAIREDASMNLEAVEELHAKFPDIELMFIESGGD
NLSTTFNPELADFTIFVIDVAEGDKIPRKGGPGITRSDLLIINKIDLAPYVGADLGVM
DRDSKKWRGDKPFLFTNIRSKEGLDHVIGWIKKYALLED"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2568 TATGATCCACGAAGTGGGGATTGAAGCTTCCCTGATGGGACAAAACTGGTAACCAT 2627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2208 raagarcaacriagaaraaaraararrarcrirgcracgaaaararaacaaaggraagc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2328 GAAGGAGTTTAGGATGAAATTAACCCCTAAAGAGCTGGACAAGCTCATGTTGCATTATGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2268 CAAAACAGACTAGAATTTGTCCCGTTGATAGCCTAGCTATTCAATAATACAATTTGGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2388 GGGCGAATTGGCTAAAAAAGGCAAATGGCGTTAAGCTAAATTATATACTGAGGCAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2448 AGCCCTCATCAGTGCCCATGTGATGGAAGAGCCCGTGCAGGTAAAAAAAGTGTGGCGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             133 AAAAGTTAATAAAAAGTAACGAAATTAGGACTATAATCCCATTGCCTTTAAAATTTAACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CAAGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATTATGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGGCGAAGTGGCTAGAAAGCGCAAAAGCAGAGGCTTAAAGCTCAACCAAACCGAAGCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2508 TTTGATGCAAGAAGGCAGGACACTTCTTAAAGCTGATGATGTCATGCCCGGTGTAGGCCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 8406;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           809; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 1185.6; DB 1
Pred. No. 1.7e-226;
0; Mismatches 809;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=1
/transl_table=11
/product="urease G"
/protein_id="AAO15378.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /protein_id="AA015379.1"
/db_xref="GI:27462203"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     db xref="GI:27462202"
                                                                                                                                                                               /transl_table=11
/product="urease F"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /codon_start=1
/transl_table=11
/product="urease H"
                                                                                                                                                            codon start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      41.18;
67.28;
                                                                                                                                                                                                                                                                                                                                                                                                                          .7396
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1399. .8232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                         YSRLYMS"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity
Watches 1723; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          433
                                                                                                                                CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ∂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                        /trānslation="LMYYERASNKLTHSTFKEIFDFFPPHALVVLNDTKVIKARLFAH
TAOKRPVEILLHHATSPTACLAOMRGKVRFGIVLGIEGGYSCEVLBYLDNGIRVLSFK
HAGELLLBWAGVLEMLELLGHVEIPFYLKRPDEAQDLQDYGSVSVAKYFGAIAAPTASLH
FSGSAKDHLLKNFKYHVFITLHVGAGTFLSVOSEDIREHPMHAEFCRSLPQAGITLIDEA
PYILCVGTTALRATEHYKRGFGLKPCELFLHLGNPVKHAQALLTNFHLPESTLIMLVA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /translation="MKLTPKELDKLMLHYAGELAKKRKANGVKLNYTEAVALISAHVM
ERAAGKKSVADLMOEGRTLLKADDVMPGVARMIHEVGIEANFPDGTKLVTHTPVED
GGHKLAPGEVILKNEDITLANGKQATTLEVHNKGDRPVQVGSHFHFFEVNKLLEFDRE
KAYGKRLDJASGTANKREPGEKKTVELIQIGGNQRIYGFNSLVDRQADTDGKKLALKR
AKEHGFGVVNCGCDKK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /codon_start=1
/transl_table=11
/product="urease B"
/product="urease B"
/protein_id="Aa015374.1"
/db_xref="G1:27462198"
/translation="MKKISRKEYVSMYGPTTGDKVRLGDTDL1LEVEHDCTTYGEEIK
FGGGKTIRDGMAQTNSPSSHELDLVLTNALIVDYTGIYKADIGIKNGKIHGIGKAGNK
DMQDGYCNNLCVGBATEALAAAEGLIVTRAGIDTH1HF1SPQQLPTARAAGITTMIGGG
TGPADGTNATTITPGRWNLKTMLRASEEYAMNLGYLGKGNVSYEPSLVDQLEAGAIGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                        /translation="MRAKLDLFTHLLLEWGSVHNLSGAKNHODIEHNIODSLQVLDFI
PEPKSCLDIGSGAGFPAIPLELACSNARFILLEPNAKKVAFLHHVKLALNLNNLEIOR
MRIEHVSPOGSVLVDLITSRALMNAQNLIALSAPFLREGGHFLFYKGSHLRTEIACADH
ECHVYGKRVYFYSQRRDFA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        KIHEDWGSTPAAIYHCLAVVADKYDVQVAIHTDTLARAGCVEDTLQAIAGRTIHTFHTE
GAGGGHADVIKMSGBENILDASTUPTIPTVYNTAERHWANCHHLDKNIKEDVQF
ADSIRPQTIAAEDKLHDMGIPSITSSDSQAMGRVGEVITRYMGTADKWKEFGRLPE
EKGDNINFRIKRYISKYTINPAIAHGISEYVGSVEVGKPADLVUMSPAFFGIKPNMII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /trānslation="MLGLVLLYVAIVLISNGVCGLANVDARSKAVMNVFVGGLSIICN
NALIVYSTRPPTPTVTGABDVAQVQGLLINFYGATGLLFGFTYMYAAINNIYNLDWK
PYGMYCLFVTINTIBAILGHYSDALDDHRLLGITEGDWARFIWLAMGVLWLTGWIEC
ALGKSLGKFVPWLAIIEGVITAWIPAWLLFIQHWS"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /trānslation="MLVFGHPQIPCMPFKCVADIQAIAQVPSHTIPFFQTCHTDAFGL
SKHCSDQGVKYAVWVQNPLECALMANFKPTYILAENQLEACQSIANDYLFDARILKVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KGGF I ALSQMGDANAS I PT PQPVYYREMFGHHGKAKFDTNI TFVSQVAYDNGI KEELG
LQRVVL PVKONCRNI TKKDLKFNDVTAH I EVNPETYKVKVDGKEVTSKAADKI SLAQLY
                                                  /product="tRNA ribosyltransferase"
                                                                                                                                                                                                                                                                         SMVGLDKCLELYKIAIEHHYRFYSYGDGMLIL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EHAEQLEEVLKLRLDGAVFRSFLWL"
                                                                           /protein_id="AA015370.1"
/db_xref="GI:27462194"
                                                                                                                                                                                                                                                                                                                                                                                                      /protein_id="AAO15371.1"
/db_xref="GI:27462195"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /protein_id="AA015372.1"
/db_xref="GI:27462196"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /product="urease A"
/protein_id="AAO15373.1"
/db_xref="GI:27462197"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /protein_id="AA015375.1"
/db_xref="GI:27462199"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1670. .2053
/codon start=1
/transI_table=11
/product="unknown"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=1
/transl_table=11
/product="urease I"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="urease E"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2341. .3045
/codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                        /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5563. .6093
/codon_start=1
/transl_table=11
codon start=3
transI table=11
                                                                                                                                                                                                                                                                                                                                                                                /product="GidB"
                                                                                                                                                                                                                                                                                                     .1465
```

CDS

CDS

100 TOTACCARATCARCANGARACTEGORACTTCARCACCARATCACTEGORATTCATEAN 1767 101 102 102 103	
	200
	-
SERIOR CHANCE CONTRIGATOR CHANACT CONDUCTOR CONTRICTOR	

542 542 602 607 667 667

362 367 422 427

307

722

727

782

787

830

847

878

907

```
gegrage de la contra del la contra de
                                                                                                                                                                                                                                                                                                           GGGTGGGTAATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAAC
                                                              cceaagcreradcacrearragececearereargaagaggecegecegraaaaaaa
                                                                                                                                                                                                            TTGTAACTGTGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGGGAAGTGAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTGGTTGCGATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            recteaaaaegaagaeateaeceteaaegegegeaaacaegegegaaattaaaagtea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CTAATGAAGGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTGAAGCTAACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGGCACTAAAATTCGATCGTGAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ccecrerececriricaaccreeegaagaaaaaaccereeaaarcrearceacareeeda
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AACTCGCCTTAAAACGCGCTAAAGAAAAACACTTTGGCACTATCAACTGCGGTTGCGACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            acaaaraaggaaggaagaccgargaaaaaaaarrrcrcgaaaagaararcrargra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      regaccicacracegecearaaagrececrregeceacacreaccrearccraeaagreea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACATGACTGCACCATTATGGCGAAGAAATCCAAATTCGGGGGCGGGAAAACCATCCGCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 receareceachaccaceceacaceaceaceaceaceaceaceaceareaceareacea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCATATGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CCGAAGCCATTGCTTACATTAGTGCCCATATTATGGACGAAGCGCCGTGGAAAAAAA
                                                                                                                                                                                                                                                                                                                                                     ractoaccarccacarcccgradaagcrescagcaaccarccreccccccgraagrea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATAAACGCATTTATGGTTTCAACGCTCTAGTCGATCGCCAAGCCGATCACGATGGCAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -------AACGCCATAAACATAAAGCGCTTGACAAGGCGAAATCTCACGGATTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TCAAGTAAGGAGA------CTCCCATGAAAATGAAAAACAAGAATATGTAAATACCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCACTAACGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCTGATTGTGGATTACACCGGCATTTACAAAGCCGACATTGGCCATTAAAAACGGCAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ccacedearreccadadeccedeadadadecracadadarecerrrecadearecerre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CGTGGGTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGGGGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACATGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGCGGGTAAAACTATCCGTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GTAAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATG-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1052
                   243
                                                                   248
                                                                                                                  303
                                                                                                                                                               308
                                                                                                                                                                                                               363
                                                                                                                                                                                                                                                              368
                                                                                                                                                                                                                                                                                                                                                             428
                                                                                                                                                                                                                                                                                                                                                                                                            483
                                                                                                                                                                                                                                                                                                                                                                                                                                                            488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      899
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     723
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     728
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             879
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               908
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              932
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           896
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1028
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1088
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1268
                                                                                                                                                                                                                                                                                                              423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                   6 6 6
                                                                                                                                              용
                                                                                                                                                                                                8
                                                                                                                                                                                                                                                  유
                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8 &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઢ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ኞ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8 & 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /protein_id="AAA65723.1"

db_xref="G1:529424"

/tdb_xref="G1:529424"

/tanslation="MKKISYOSMYGPTTGDKVRLGDTDLILEVEHDCTTYGEEIK

/translation="mKKISYOSMYGPTTGDKVRLGDTDLILEVEHDCTTYGEEIK

FGGGKTIRDGMGGTUSPSSHELDLVITNALIVDYTGIYKADIGIKNGKIHGIGKAGNK

DLQDGVCNRLCVGPATEALAAEGLIVTNALIVDYTGIYKADIGIKNGKIHGIGKAGNK

TGPADGTNATTITPGRNNILKENIRASESYAMNIGYLGKGNSFEPALIDQLEAGAIGF

KIHEDMGSTPSAINHALNIADKYDVQVAIHTDTLNAEAGCVEDTLEAIAGRITHTFHTE

GAGGGHAPDVIRWAGEFNILPAGTNPTIPFTKNTEAEHDMAMCHHLDKNIKEDVEFA

DSRIRPQTIAAEDKLHDMGIFSITSSDSQAMGRVGEVITRTWGTADKNIKEEFGRLFEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /procein id="AAA65722.1"
/db_xref="G1:529423"
/tranelation="MKLTPRELDKLMLHYAGELAKQRKAKGIKLNYTEAVALISAHVM
EERAGKKXVADLMQEGRTLLLKADDVWPGVAHMIHEVGIEAGFPDGTKLVTIHTPVEA
GSDKLAPGEVILKNEDITLNAGKHAVQLKVKNKGDRPVQVGSHFHFFEVNKLLDFDEE
KAYGKRLDIASGTAVRFEPGEEKTVELIDIGGNKRIYGFNALVDRQADHDGKKLALKR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KGDNDNFRIKRYISKYTINPAITHGISEYVGSVEVGKYADLVLWSPAFFGIKPNMIIK
GCFIALSQMCDANASIPTPQPYYYRBWFGHHGKAKFDTNITFVSQVAYENGIKHELGL
GWYULPVKNCRNITKKDLKFNDVTAHIEVNPETYKVKVDGNEVTSHAADKLSLAQLYN
LF"
                      03-MAY-1995
                                                                                                                                                                                      Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TIGIGAAIAAGAIIAACAAAGAAIAAAIAAI--AIIAICIIIGGAIAACAAAIAIIAAC 127
                                                                                                                                                                                                                                                                                                                                                                                 gi:529422.
(individual_isolate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CCATITIATACGAGGAGTITAGGATGAACTGACACCTAAAGAGTTGGATAGATAGATGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AACCATTAGCCAAAAGATACTAAAATCTGCCTCGTTGATAGCTTGCGCTATTCAATAACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACTTATATAAAAAGTTAATAAAAAGTAACGAAATTAGGACTATAAATCCCATTGCCTTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAATTTTAACACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                           colnick, J.V., O'Rourke, J., Lee, A. and Tompkins, L.S.
Molecular analysis of urease genes from a newly identified uncultured species of Holicobacter Infect. Immun. 62 (5), 1631-1638 (1994)
8168924
On May 3, 1995 this sequence version replaced and original source text: Helicobacter 2) DNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  36;
                   BCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Helicobacter heilmannii"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 2664;
                   DNA linear complete cds's.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 1138; DB 1;
Pred. No. 6.8e-217;
1; Mismatches 826;
                                                                                                                                      Candidatus Helicobacter heilmannii
Candidatus Helicobacter heilmannii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /mol_type="genomic DNA"
/isolate="2"
                      đq
                   2664 bp
urease, '
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /db_xref="taxon:35817"
/lab_host="BALB/c"
2200._.204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           organism="Candidatus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product="urease"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             919. .923
930. .2636
/codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /product="urease"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AKEKHFGTINCGCDNK
                                          heilmannii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity 66.4%;
Matches 1709; Conservative
                                                                                            L25079.1 GI:793908
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .915
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .2664
                                               Heliobacter
L25079
                                                                                                                  urease.
Candidatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 63
                   LOCUS
DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       source
                                                                                                                                                                                                                                     REFERENCE
AUTHORS
TITLE
HECUREASE
                                                                                                                                                                                                                                                                                                                                  JOURNAL
                                                                                                                                                                                                                                                                                                                                                                  PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                                                      COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DRIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
```

1087

1027

967

1231

g

8 8 8 8

ò

g

ò

g

ò

8 & 8

à

g ò g Š g ò g ઠ g ð g 8 ద ò 셤 Š g ઠે q δ g ઠે

Š

```
Submitted (12-JNN-1999) Astra Research Center Boston, 128 Sidney Street, Cambridge, MA 02139, USA
Address all correspondence to: hp@arcb.us.astra.com or Richard A Alm, Astra Research Center Boston, 128 Sidney Street, Cambridge, MA, 02139. Lo-See L. Ling, Donald T. Moir, Douglas R. Smith, Braydon C. Guild, Gilles Carmel, Anthony Caruso, Debra M. Mills, Rene Gibson, and Gerald F. Vovis are with Genome Therapeutics Corporation, 100 Beaver Street, Waltham, MA, 02453. Qin Jiang and Diane B. Taylor are with the University of Alberta Department of Medical Microbiology and Immunology, Edmonton, Alberta, Canada, T6G 2H7 and the Canadian Bacterial Diseases Network. All other authors are with Astra Research Center Boston, 128 Sidney Street, Cambridge, MA, 02139. Putative identifications, sequence alignments, and name and sequence search capabiblity are available at ARCE's World Wide Web site. (URL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AE001446 12037 bp DNA linear BCT 20-JAN-1999
Helicobacter pylori, strain J99 section 7 of 132 of the complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales; Helicobacteraceae; Helicobacter.

1 (bases 1 to 12037)
Alm, R.A., Ling, L.S., Moir, D.T., King, B.L., Brown, B.D., Doig, P.C., Smith, D.R., Noonan, B., Guild, B.C., deJonge, B.L., Carmel, G., Tummino, P.J., Caruso, A., Uria-Nickelsen, M., Mills, D.M., Ives, C., Gibson, R., Merberg, D., Mills, S.D., Jiang, Q., Taylor, D.E., Vovis, G.F. and Trust, T.J.
                              2464
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Genomic-sequence comparison of two unrelated isolates of the human gastric pathogen Helicobacter pylori
Nature 397 (6715), 176-180 (1999)
2405 CGTGTCTCAAGTGGCTTATGAAAACGGCATTAAACACGAGTTGGGCTTGCAAAGAGTTGT
                                                                                2432 TCTACCGGTCAAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCAACGACAAAAC
                                                                                                                                  Grieccirgigadadcieccedacarcaccadadadadcriradgricadcenterec
                                                                                                                                                                                         2492 GGCAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCAC
                                                                                                                                                                                                                                           CTCTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTAG 2603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="similar to H. pylori 26695 gene HP0072"
                                                                                                                                                                                                                                                                                                                                 /organism="Helicobacter pylori J99"
/mol_type="genomic DNA"
/strain="J99"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /codon_start=1
/transT_table=11
/product="UREASE_BETA_SUBUNIT"
/protein_id="AAD05651.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  http://www.astra-boston.com/hpylori)
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 (bases 1 to 12037)
King,B.L., Alm,R.A. and Trust,T.J.
Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /gene="ureB"
/note="synonym: jhp0067"
complement(143..1852)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /db_xref="taxon:85963"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         complement (143. .1852)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Helicobacter pylori J99
Helicobacter pylori J99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ĀE001446 AE001439
AE001446.1 GI:4154573
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9923682
                                                                                                                                       2465
                                                                                                                                                                                                                                                                                                  2552
                                                                                                                                                                                                                                                                                                                                                    2585
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            source
                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 13
AE001446/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PUBMED
REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMMENT
                                                                                                                                    g
                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                 요
                                                                                8
                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1771
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2071
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2251
                                                                                                                                                                                                                     1471
                                                                                                                                                                                                                                                                                                                                                                                1508 TGGCTACCTTGGTAAGGGGAATGTGTCTTTTGAACCTGCTCTCATTGACCAGCTAGAAGC 1567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TGAAGCCGGCTGTGTGGAAGACCCCTAGAAGCCATCGCTGGACGCACCATCCACACCTT 1747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACACTTAGACATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACA 1891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GGGTGTGATCGCGATGACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGAT 2011
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2345 GTACTACCGCGAAATGTTCGGCCACCACGGCAAAGCCAAATTTGACACCAACATCACTTT 2404
                                                                                                                                                                                                                                                                                                                                                                                                                                    1568 CGGCGCGATTGGCTTTAAAATCCACGAAGACTGGGGCAGCACACCCTCAGCCATCAACCA 1627
  CGATTCACACACCACTTCCTCCACAACAATTCCCTACCGCTCTAGCCAATGGCGT 1351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TCCGGGCAAATGGAACTTGCACCGCATGTTGCGCCGCAGCAGAAGAGTATTCTATGAATGT
                                                                                                                                                                                                                                                                                                                           GGGCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAAAACAACTTGTAGAACAAGTAGAAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CCACATTGAGGGGGGGGGGGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAATATTCTACCCTCCTCCACCACCACCACTATTCCCTATACCATTAATACGGTTGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATTITCICAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GGGGATTTTCTCCATCACTAGCTCCGACTCTCAAGCCATGGGTCGCGTGGGCGAAGTGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2012 TCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCCTGAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2045 CACCCGCACTIGGCAAACAGGGGACAAAAACAAAAAAGAAITIGGCCGCTIGCCTGAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2072 IGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCCCAAATACACTATCAACCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2105 AAAAGGCGACAACGACAACTTCCGCATCAAACGCTATATTTCCAAATACACCCATCAACCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2132 CGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGGCAAGATCGCCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2165 TGCCATCACACACGGCATTTCTGAATATGTCGGCTCTGTAGAAGTGGGTAAATACGCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CTTGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAAGGCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2225 CTTGGTGCTTTGGAGCCCTGCGTTCTTTGGCATTAAACCCAACATGATCATCATCAAAAGGCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2285 TTTCATTGCGCTTTCTCAAATGGGCGATGCCAACGCTTCTATCCCCACTCCCCAACCCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2372 TGTTTCCAAAGTCGCCTATGAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCGCCCAAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCCACTCCCCAACCGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2312 ITATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTTT
                                      TACAACCATGTTTGGAGGCGGCACACAGGTCCTGTAGATGGCACGAATGCGACTACTATCAC
                                                                                                                                               CACCACCATGATCGGGGGGGGGGACTGGACCTGCAGATGGCACCAACGCCACCACCATCAC
                                                                                                                                                                                                                                                                      CTGCTTGAGCGTGGCAGATGAGATACGATGTGCAAGTTTGTATCCACACGGATACAGTCAA
                                                                                                                                                             1388
                                                                                                                                                                                                                                                                      1448
                                                                                                                                                                                                                                                                                                                           1472
                                                                                                                                                                                                                                                                                                                                                                                                                                    1532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1712
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1748
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1832
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1985
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2252
                                                       1328
                                                                                                           1352
                                                                                                                                                                                                                  1412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1652
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1892
  1292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1688
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1592
```

```
LKYCLKI IARDS FYS YRTGIY I PLGI SLKDOKTAQXMILADLS VVGAYLKKQQENEKAQ
SPYTRENINYTYES YYSPYGWYGWYGMYGMYGMYGMYDFYDFYDDODGOFYDGWYGFY FUMFFWMO
VODYLMLENYMY ALDQEFI LLDHAGN SI NQLDT PTDDDDDDCDDXGS SQPANLMS FYRD FY
SKDI QYNRLNSALVNILDNSHMLKONS LFHYKAMPTKS VDA ITSQAKELNHILVGQ IKE
MKQDGAS PINK IDSVNKAMEVRDKLDNNILNQLDNDLKODKOTS SEQQAQVDKALDS VQ
QLSHASDVVGNYLDGSLKI DGDDRDDLLNDA INNPMQCPAQOTFI NINMDNTHANDS KDQ
GGNAL INPNNATNDDHMDTHWTDTSTSNANDT FYDDKADSGONTGDMNNTDGNYTGNT
TGNTTTGNTDTMNTNDDMDTGNTTDTSNANDT FYDDKADSGONTGDMNNTDGNYTGNTGNT
TGNTTTGNTDDMNNNUNDDMGNTTDTSNANDT FYDDKADSGONTGDMNNTDDGNTGNT
                                                                                                                                                                                                                                                                                                                                                                                                                      /translation="MSILAEKLSSILKRYDELTALLSSVEVVSDIKKLTELSKEQSSI
EEISVASKEYLSVLEGIKENKELLEDKELSELAKEELKILEIQKSELETAIKQLLIPK
DPUDDKNIYLELRAGTGGDEAGIFVODLFRAYCKYADLKKWKVEIVSSSENSVGGYKE
ITULIKGKGVYSRLKFEAGTHRVQRVPETESQGRIHTSAITVAIMPEVDDVEVSINRY
DLKIEVFRAGGHGGGCVNTTDSAVRITHLETNISVSMQDEKSQHKWNDKALKILKARL
YEKQIEEQQLANAKDRKEQVGSGDRSERIRTYNYSPQNRLSEHRINLTLYSLEEIMLSG
NLDEVINPLIAHAQSQFE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /trainilation="MKTIFCGMALAFSVSMAEKSGAFLGGGFQYSNLENQNTTRTPSA
NNNTPINTSHRGNNQAAPAGETPSVINTNNYGWYCVDAMAGYKWFFGKTKRFCFRTY
GYSYNHAMISFVGSKLGIMDGASQVNNFTYGVGFDALYNFYESKEGYNTAGLFVGFG
LGGDSFIVQESYLKSQMQICNNTAGCSASMNTSYPQMPVEFGFRSNFSKHSGIEVGF
KLPLFTNQFYKERGVDGSVDVFYKRNFSIYPNYMINL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LOKKAQLVSFKIQGIMKRIFMGANTLERFLSDENGAINDTLKRRMLSBFLLANGHVLLL
VSAIYTNNNERMITAMNMDSKIAYPNTALAENMTNOIHSLKSITRSDPYKEVNGDKI
YGMDITLERHGKNQNVIGALNFFLUIDSTYTDVVGKKKSNTFLMGKDGRILINDNREI
QDKILSAINDDKRYKAVEYYNQURAGTSYFSLGGNTETFLAIQPEPFFEEKSNNGH
HWRHAIGKYVNKSLVFKEATNTKFIIITTLILGVLVLAFLVFIIISNLITKRISRVNN
/translation="manhksaekrirqtikrternrpyktkvkniikavreavaindv
akaqerlkiankelhkrvskgilkkntasrkvsrlnasvkkiala"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /protein_id="AAD05649.1"
| Do xref="G1:4154574"
| translation="AKAIKILIMTLSLNAISVNRALFDLKDSQLKGELTPKIVDFGG
| YKSNTTEWGATALNYINAANGDAKKFSALVEKMRFNSGILGNFRAHAHLRQALKLQKN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                translation="MKSTRIGSKIVMMVCAVVIVISAVMGVIISYKVESVLQSQATEL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  s698. 7465
/gene="jhp0073"
/note="similar to H. pylori 26695 gene HP0078 and HP0079"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /transl_table=11
/product="methyl-accepting chemotaxis protein (MCP)"
/protein_id="AAD05650.1"
/db_xref="G1:4154575"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       7716. .9488
/gene="jhp0074"
/note="similar to H. pylori 26695 gene HP0080"
                                                                                                                                                                                                                                'note="similar to H. pylori 26695 gene HP0077"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    H. pylori 26695 gene HP0082"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /codon start=1
/transl_table=11
/product="putative Outer membrane protein"
/protein id="AAD05657.1"
/db_xref="G1:4154582"
                                                                                                                                                                                                                                                                                                                         /product="PEPTIDE CHAIN RELEASE FACTOR 1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MGDMINDDMGGDMGDMGDMGGDMGN"
                                                                                                                                                                                                                                                                                                                                                       /protein_id="AAD05656.1"
/db_xref="G1:4154581"
                                                                                                                                'note="synonym: jhp0072"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          complement (9912. .11933)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement (9912. .11933)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /transl_table=11
/product="putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="similar to
/codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                              /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            7716. .9488
'gene="jhp0074"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6698. .7465
/gene="jhp0073"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="jhp0075"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      'gene="jhp0075"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
/transl_table=
                                                                                                                                                           5226. .6284
/gene="prfA"
                                                                                                      gene="prfA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     6698.
                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                               GAGGGHAPDI IKVAGEHNI LPASTNPTI PFTVNTEAEHMDMLMVCHHLDKSIKEDVQF
BADSR RRQTI TAAEDTI LHDMGI PSITSASDSQAMRKOTBVUTRTWOTADINKKEPGREKLKE
EKGDNDNPR TRYLSKYTI INPA 1AHGI SEYVGSVEVGRVADI VLMSPAP PGVKDNMI I
KGGPI ALSQMGDANASI PTPQPVYYREMPAHHGKAKYDANI TFVSQAAYDKGI KEELG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    / translation="MXI FGTDGVRGKAGVKLTPMFVMRLGIAAGLYFKKHSQTNKILI
GKDTRKSGYMVENALVSALTSIGYNVIQIGPMPTPALAFLTEDMRCDAGIMISASHNP
FEDNGIKFFNSYGYKLKGEBERALEEI FHDEELLHASSYKVGBSVGSARRIDDVIGRYI
AHLKHSFPKHINLOGKLRIVLOGANGAAYKVAPVVFSELGADVLVINDEPNGCNINEQC
GALHPNQLSQEVKKYRADLGFAFDGDADRLVVVDNLGNIVHGDKLLGVLGVLGVYQKSKNA
                                                                  FGGGKTLREGMSQSNNPSKEELDLIITNALIVDYTGIYKADIGIKDGKIAGIGKGKKTK
MODGVKNNISVGPATPALAGEGLIYTNAGIDTHIHFIS BOQUPTARAGVTTMÄGGG
TGPADGTTNYTIIFPERNIKWMLRALEEYSNNIGFLAKGNASNDASLADDIEGAGAIGF
KIHEDMGTTPSAINHALDVADKYDVQVAIHTDTLNEAGCVEDTWAAIAGRTHHTFHTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /translation="minttoksllvemgvefilegyddaikhailegfhyeslvidiv
Lvenkgvafsllsfilegglkyldillilglfi filmrokelfkshaibfgmvfgagvsn
Vldrfvhggvvdyvyyyhygfdfaifnfadvmidvgvgvlllrofffkokonkikgiit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LSSQAVVATSMSNLALKEYLKSQDLELKHCAIGDKFVSECMRLNKANFGGEQSGHIIF
SDYAKTGDGLVCALQVSALVLESKLVSSIALNPFELYPQSLVNLNIQKKPPLESLKGY
SALLKELDQLEIRHLIRYSGTENKLRILLEAKDEKLLESKMQELKEFFEGQLC"
                                                                                                                                                                                                                                                                                                                                   LERQVLPVKNCRNI TKKDMQFNDTTAHI EVNPETYHVFVDGKEVTSKPANKVSLAQLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /trānslation="MKLTPKELDKLMLHYAGELARKRKEKGIKLNYVEAVALISAHIM
EEARAGKKTAAELMQEGRTLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NGKLVPGELFLKNED I TINEGKKAVSVKVKNVGDRPVQ I GSHFHFFEVNRCLDFDREK
TFGKRLD I ASGTAVRFEPGEEKSVEL I D I GGNRR I FGFNALVDRQADNESKKI ALHRA
                                       translation="MKKISRKEYVSMYGPTTGDKVRLGDTDLIAEVEHDYTIYGEELK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note="similar to H. pylori 26695 gene HP0073"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="similar to H. pylori 26695 gene HP0074"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="similar to H. pylori 26695 gene HP0075"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note="similar to H. pylori 26695 gene HP0076"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /transl table=11
/product="LIPOPROTEIN SIGNAL PEPTIDASE"
/protein id="MAND05653.1"
/db_xref="G1:4154578"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="phosphoglucosamine mutase"
/protein_id="AAD05654.1"
/db_xref="G1:4154579"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /transl_table=11
/product="30S RIBOSOWAL PROTEIN S20"
/protein_id="AAD05655.1"
/db_xref="G1:4154580"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /transl_table=11
/product="UREASE ALPHA SUBUNIT"
                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="synonym: jhp0068"
complement(1856. .2572)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /protein_id="AAD05652.1"
/db_xref="GI:4154577"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="synonym: jhp0069"
complement (2926. .3417)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="glmM"
/note="synonym: jhp0070"
complement(3411..4748)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     'note="synonym: jhp0071"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  complement (2926. .3417)
                                                                                                                                                                                                                                                                                                                                                                                        complement (1856. .2572)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   complement (3411. .4748)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KERGFHGAKSDDNYVKTIKE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /codon_start=1
/transl_table=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /codon start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /codon_start=1
/transl_table=1
                                                                                                                                                                                                                                                                                                                                                                                                                                gene="ureA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               'gene="lspA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene="rpsT"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="ureA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /gene="lspA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene="glmM'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="rpsT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
```

Guery Best Match	Query match Best Local Similarity 65.3%; Pred. No. 1.4e-207; Matches 1681; Conservative 1; Mismatches 853; Indels 39; Gaps 4;	qa	
ò	67 TAATRCTATTATTAATTTTTAATAATTACTT-ATTATCATATAATAATATTATTACT 125	Š	1111 CG
Op	2712 TAATACTAATTCATTTTAAATAATTAGTTAATAAGGCTTCTGTTAATCTTAGTAAA 2653	3 2	
Š.	TATATTAAAAAGTTAATAAAAAGTAAACGAAATTAGGACTATAATACCTTTAAAA	. a	
Q O -	TCAAAAGATTGCTACAATTACTCCAACCTTGATTGCGTTATGTCTTCAAGGAAAAAACAC	ò	1231 TÇ
ð	186 TTTPACACAAGGAGTAATAGGTGAAACTCACAAAGAGCAAGAAAATTCTTGTTAT 245 2603 TTTPAACAAGAAAAGAAAAGAAAGAAAGAAGAAGAAGAAAAAAA	q	1515 GC
3 8	こので、	õ	1291 TC
∂ 6	240 ATTATECCOCCEANACTACATACCCCANACCACATACCACTTANACTCCANCCCCG 505 2532 ACTACGCTGGAGAATTAGCTAGGAAAGGAAAGAAAAAAAA	qa	1455 TT
ò	AAGCCATTGCTTACATTAGTGCCCATATTATGGACGAAGCGCGCCGTGGAAAAAAACCG	ò	1351 TT
: 셤		අු	1395 TA
ò	366 TTGCCCAGCTTATGGAAGAGTGCATGCACTTTTTGAAAAAAGATGAAGTAATGCCCGGGG 425	ð 1	1411 CT
QQ	2412 CGGCTGAATTGATGATGAAGAGGCGCACTCTTTAAAACCGGATGATGATGATGGATG	<u> </u>	
ठे व	TGGGTAATATGGTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTG	7 A	
a a	TGGCAAGCATGATCCATGAAGTGGGTATTGAAGCGATGTTTCCTGATGGGACCAAACTCG	ò	1531 ÇG
ઠે દ	486 TAACTGTGAATTGGCCCATCGAACCACAATGAGCACTTCAAAGCGGGGAAGTGAAATTTG 545 2262 HILL	প্র	1215 CC
3 8	を出ったので、のでいていないというでは、100mでは、100mでは、100mでは、100mでは、100mでは、100mでは、100mでは、100mでは、100mでは、100mでは、100mでは、100mでは、100mでは	ò	1591 AC
경 음	GITGCOGILANDA CATOLICANO CITANIO CANDA CANDA CANDENO INTERACTORICANO CANDA CAN	qa	1 1155 AT
ò	ATGAAGGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTGAAGCTAACAAGG	ò	1651 AT
අු	2175 ACGTGGGCGACAGACCGGTTCAAATCGGTTCACACTTCCATTGTTTGAAGTGAATAGAT 2116	đ	
ò	666 CACTAAAATTCGATCGTGAAAAAGCCTATGGAAACGCCTAGATATTCCCTCTGGCAACA 725	ð í	
qq	2115 GCCTAGACTTTGACAGAGAAAAACTTTCGGCAAACGCTTAGACATTGCGAGCGGGACAG 2056	g 8	
ολ	726 CGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTA 785	Š	
qq	2055 CGGTAAGGTTTGAGCCTGGCGAAGAAAATCCGTAGAATTGATTG	8 à	4/2 AC
δλ	786 AAAAAGIGATIGGCATGAACGGGCTIGTGAATAACATCGCGGATGAACGCCCATAAACATA 845	3 € 	1631 A
qq	1995 gaagaatctttggatttaacgcattggttgatagccaagcaacgagaagcaaaaglaaaa 1936	: è	
δ	846 AAGCGCTTGACAAGGGAAATCTCACGGATTT	, q	
ОÇ	1935 TTGCTTTACACAGAGCTAAAAGAGCGTGGTTTTCATGGTGCTAAAAGCGATGACAACTATG 1876	6	
ò	878ATCAAGTAAGGACTCCCATGAAAATGAAAAACAAGAATATGTAAATACCT 930	; A	795 TC
qo	1875 taaaaacaattaaggagtaagaaatgaaaagattagcagaaaagatatctgtgt 1816	ò	2011 T
Š	ACGGACCCACCAAAGGCGATAAAGTGCGCTTAAGAAGATACCGATCTTTGGGCAGAAGTAG	qa	735 TC
a	ATGGCCCTACCACAGGCGATAAAGTGAGATTGGGCGATACAGATTTGATCGCTGAAGTAG	ð	2071 A
රු ස්	991 AACHTGACTATACCACCTATGGGGAAGAACTTAAATTTGGCGGGGTAAAACTATCGTG 1050 175E AACHTGACTAAAACTATGCGAACACTAAAACTATGGCGGGGTAAAACTATCGGTG 1050 175E AACHTGACTAAAACTATGGCGAACAACTTAAATTTTGGCGGGGGTAAAACTATCGTG 1050	g	675 AJ
3 2	たいたとはなってもとなっていましましました。 これのものものものものものものものものものものものものものものものものものものも	۵	2131 C
ζ,	0,0000	-	_

2190 CGATTCACACACCCACTTCCTTCTCCACAATTCCCTACGGCTCTAGCCAATGGCG 1350 TICCGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTATTCTATGAATG 1470 1650 1830 1950 2010 2070 CGTGGGTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGGGGGAA 1290 negititettagetaaaggtaacgetietaacgacgcgagettagcggatcaaatrgaag 1216 ACACTTAGACATGCTCATGACATGCCACCTAGACAAACGCATCCGCGAGGATTTAC 1890 ATTTTCTCAAAGCCGTATCCGCCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATA GOGGIGIGATGGCGAAGCTCGGAAGCAATGGGGGCGTGCAGGGAAGTGA ATGGCAAAGATAACGATAATTTCGCATTAAGCGCTACATCTCCAAATACACTATCAACC AAAAAGGCGATAACGACAACTTCAGGATCAAACGCTACTTGTCTAAATACACCATTAACC TTTAATCGTGGATTACACCGGTATTTATAAAGCGGATATTGGTATTAAAGACGGCAAAA TACAACCATGTTTGGAGGGGGCACAGGTCCTGTAGAATGGCACGAATGCGACTACTATCA GGGCGCGATTGGTTTTAAATTGCATGAAGACTGGGGCACAACACCAAGTGCGATC CTGCTTGAGCGTGGCAGATGCGATGTGCCAAGTTTGTATCCACACCGATACAGTCA CCACATTGAGGGAGGGGGGAGACACTCACCTGATGTTATCACCATGGCAGGCGAGG CAATATTCTACCCTCCTCCACCACCACTATTCCCTATACCATTAATACGGTTGCAG TCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCCTGAAG GATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAAA

```
/u_xil=10.1.213130
/u_xil=10.1.213130
/u_xil=10.1.wKilFOROYGGKAGVKITPMFVWRLGIAAGLYFKKHSOTNKILI
GKDTRKSGYWVENALVSALTSIGYNVIQIGPMPTPAIAFLTEDMRCDAGIMISASHNP
FEDNGIKFPNSYGYKIKEEERAIEEIFHDEELLHSSYKVGESYGAARKIDDVGRYI
AHLKHSFPRGHINLOSIR.RILDTANAARVAPVVPSELGADVLVINDEPNGCNINDOC
GALHPNQLSQEVKKYRADLGFAFDGDADRLVVVDNLGNIVHGDKLLGVLGVYQKSKNA
LSSQAVATNWSNIALKEYLKSQDLELKHCAIGDKFVSECMQLNKANFGGEOSGHIIF
SDYAKTGDGIVCALQVSALVLESKQUSSVALNPFELYPQSLVNLNVQKKPPLESLKGY
SALLKELDKLEIRHLIRYSGTENKLRILLEAKOEKLLESKMQELKEFFEGHLC"
4796. .5065
/gene="HP0076"
/note="HP0076"
/note="similar to SP:P48948 PID:755068 percent identity:
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /procedin_id="AADO7148.1"
/db_xref="cd1:213158"
/tamslation="MSILDASILKRYDELTALLSSAEVVSDIKKLTELSKEQSSI
BEISIASKEYLSVLENENKELLEDKELSELAKEEIKILETOKSDETAIKQLILIPK
DPNDDKNIYLELRAGTGGDEAGIFVGDLFKAYCRYADLKKWKVEIVSSSENSVGGYKE
ITALIKKGWYSRLKFRAGTHRYQNEVPETESQGSHTFSAITVAIMPENDDEWSINPS
DLKIEVFRAGGHGGCVNTTDSAVRITHLPTNISVSKQDEKGGHKNCKALKILKARL
YEKQIEEQQLANAKDRKEQVGSGDRSERIRTYNYPQNRLSEHRINLTLYSLEEIMLSG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /product="ribosomal protein S20 (rps20)"
/product="ribosomal protein S20 (rps20)"
/protein id="AaD07147.1"
/bx xref="c1:2313157"
/translation="WANHKABEKRIROTIKRTERNRFYKTKIKNIIKAVREAVAVNDV AKAQERLKIANKELHKFVSKGILKKNTASRKVSRLNASVKKIALA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /trānslation="MKKVPLGMALAFSVSMAEKSGAFLGGGFQYSNLENQNTTRTPGA
NNNTPIDTSMFGSNKTAPAQETQSASKPDTKVNPSASWMKK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note="similar to GB:M11519 SP:P07011 PID:147567
PID:968930 GB:U00096 percent identity: 52.87; identified
by sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="similar to GB:AE000511 PID:2313160 percent identity: 100.00; identified by sequence similarity;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protein; identified by GeneMark;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /transl_table=11
/product="peptide chain release factor RF-1 (prfA)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              producE="H. pylori predicted coding region HP0078"
protein id="AAD07149.1"
db_xref="GI:2313159"
/note="similar to GB:M60398 SP:P25177 FID:149008 GB:AE000511 PID:2313156 percent identity: 100.00; identified by sequence similarity; putative".codon start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="outer membrane protein (omp3)"
/protein id="AAD07150.1"
/db xref="G1:2313160"
                                                                                                                                                             (areC)
                                                                                                                                                        /product="urease protein
/protein_id="AAD07146.1"
/db_xref="G1:2313156"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NLDEVINPLIAHAQSQFE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6658. .6915
/gene="HP0078"
6658. .6915
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                // start=1
/transl for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5189. .6247
/gene="HP0077"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5189. .6247
/gene="HP0077"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6926. .8713
/gene="HP0079"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6926. .8713
/gene="HP0079"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6658. .6915
/gene="HP0078"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /codon_start=1
/transl_table=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /codon_start=1
/transl_table=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              putative"
```

gene

CDS

CDS

gene

CDS

gene

```
AEKDKOSKLTSDSPTGGOOGVVAQNTASNDSGEATTLENTASTDNTTATTDETYTKST
DTTVAGAAQKVETDNTAVQSAEQTLKTDVAKVQADAAKDFBTTFGADQABGTAEK
ALQQABSKLTNOOGTLNTALQOOTKTPTSTPPTKEEPKHTASSGTPBAPESPPAKKD
ETSGTPSAAGSSVASQTTKDTTMYNILKSVSVSAMTTLSGVETMSQQTATGHLLMS
STDLSSVIPNAQGLNSAFSTLESAQNTLKGYLNSSSATIGQLTNGSNAVVGALDKAIN
QVDMALADLSADTQKTQAVTLATASDSPTTTTDAINFLAKSUMAGOOTSTNVHK
NIQTAVQAQGTYTPSVINTNYGQWFQVDAMAGYKWFFGKTKRFGFRSYGYSYNHA
NLSFVGSQLGIMEGASQVNNFTYGYGPDVLYNFYSSKEGTNTAGLELGFGLGGBSFTV
QGESYLKSQMHICNNTAGCSASMNTSYFQMPVEFGFRSNFSKHSGIEVGFKLDFLFTNQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ä,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2521
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1984
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1924
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTCCACTATGCTGGAGAATTGGCTAAAAACGCAAAGAAAAAGGCATTAAGCTTAACTAT 2461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2400 ACTGCGGCTGAATTGATGCAAGAAGGCGCACTCTTTTAAAACCGGATGATGTGATGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1923 AAAATTGCTTTACACAGAGCTAAAGAGCGTGGTTTTTCATGGCGCTAAAAGCGATGACAAC 1864
translation="MKKSFKKLGFVSLAASGVLLGSMNATDLETYAALQKSSHVFGNY"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           662 AAGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGC 721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACCTACGGACCCACCAACAAGGGGATAAAAGTGCGCTTAGGAGATACCGATCTTTGGGGAGAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2580 ACACTTTAAGAATAGGAGAATAAGATGAAACTCACCCCAAAAGAGTTAGACAAGTTGATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTATATTATGCGGGCGAAGTGGCTAGAAAGCGCAAAGCAGAGGGCTTAAAGCTCAACCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GGCGTGGCAAGCATGCATCAAGTGGGTATTGAAGCGATGTTTCCTGATGGGACAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTTGTAACTGTGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ciccità à conscata con contra de de contra de la contra dela contra de la contra de la contra de la contra de la contra dela contra de la contra del la contra de la contra de la contra de la contra del la contra de la contra del la co
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    602 ACTAATGAAGGCCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AGATGCTTAGACTTTGACAGAGAAAAATTTTCGGTAAACGCTTAGACATTGCGAGCGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 722 AACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AACAGAAGAATCTTTGGATTTTAACGCGTTGGTTGATAGGCAAGCAGACAACGAAAGCAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -----ATCAAGTAAGGAGACTCCCATGAAA---ATGAAAAACAAGAATATGTAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1863 TATGTAAAACAATTAAGGAGTAAGAAATGAAAAGATTAGCAGAAAAGAATATGTTTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2223 TTCTTAAAAATGAAGACATCACTATCAACGAAGGCAAAAAAGCCGTTAGCGTGAAAGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAAAATGTTGGCGACAGACCGGTTCAAATCGGCTCACACTTCCATTTTGAAGTGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               782 AGTAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCATAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CCCGAAGCCATTGCTTACATTAGTGCCCATATTATGGACGAAGCGCGCCGTGGAAAAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGGGTGGGTAATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITGGITGCGATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      842 CATAAAGCGCTTGACAAGGCGAAATCTCACGGATTT---------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAAATTTAACACAAGGAGTAATAGGTGAAACTCACACCCAAAAGGAGCAAGAAAGTTCTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 1; Length 10903;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              794; Indels
                                                                                                                                                                                                                                                                                                                                              FYKERGVDGSVDVFYKRNFSIYFNYMINF"
8959. .10740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 1081.6; DE
Pred. No. 1e-205;
0; Mismatches 79
                                                                                                                                                                                                                                                                                                                                                                                                                   /gene="HP0080"
8959. .10740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         37.5%;
llarity 66.2%;
Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best_Local Sim
Matches 1626;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2520
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                878
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ठे
```

2306

2366

364

424

2426

304

```
2487 AAAACGGCAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTC 2546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            acraccecrcacarreaagreaarcergaacrraccarerereresearesaagaa 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CCCGAAGCCATTGCTTACATTAGTGCCCATATTATGGACGAAGCGCCCCTGGAAAAAA 361
                      GAAGAAAAAGGCGATAACGACAACTTCAGGATCAAACGCTACTAGTCTAGTCTAAATACACCATT
                                                          AACCCCGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGCCAAGATC
                                                                                                                     2367 ACTITIGITICCAAAGTCGCCTATGAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGGCGC
                                                                                                                                                                                                                                                                            <u> Actititicifetcreadecedctitateacaadecertraadeacatraecectreaaada</u>
                                                                                                                                                                                                                                                                                                                       AACCCAGCGATCGCTCATGGGATTAGCGAGTATGTAGGTTCTGTAGAAGTGGGCAAAGTG
                                                                                                          GCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAA
                                                                                                                                                        GCCGGTATGGTGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCCACTCCCCAA
                                                                                                                                                                                                        CCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATC
                                                                                                                                                                                                                         78 ACACTITAAGAATAGGAGAATGAGATGAAACTCACCCCAAAAGAGTTAGATAAGTTGATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTATATTATGCGGGCGAAGTGGCTAGAAAGCGAAAGCAGAGGGCTTAAAAGCTCAACCAA
          GAAGATGGCAAAGATAACGATAAATTTCCGCATTAAGCGCTACATCTCCCAAATACACTATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAAATTTAACACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTG
                                                                                                                                                                                                                                                                                                                                                                                                                   2547 TGCACCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCCAGCGCTACACTTTCTTGTAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        [ (bases 1 to 2735)
Lee, C.K., Monath, T.P., Ackerman, S.K., Thomas, W.D., Soman, G. Kleanthous, H., Weltzin, R.A., Pappo, J., Ermak, T., Guirakhoo, Bhagat, H. and Sussman, I.
Multimeric, recombinant urease vaccine
Patent: US 5837240-A 1 17-NOV-1998;
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6; Length 2735;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 1075.2; DB 6;
Pred. No. 2.4e-204;
0; Mismatches 798;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1. .2735
/organism="unknown"
/mol_type="unassigned DNA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AR054309 2735 bp
Sequence 1 from patent US 5837240.
AR054309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GI:5979886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         37.3%;
66.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Unclassified.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AR054309.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1622;
                                                                                                                                                                                                                                                                                                                                                                                 243
                                                                                                                                                           2247
                                                                                                                                                                                                                                                                                                        2427
                                                          2127
                                                                                                          2187
                                                                                                                                                                                                         2307
                                   663
                                                                                  603
                                                                                                                                   543
                                                                                                                                                                                                                                                                                363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         242
            2067
                                                                                                                                                                                                                                 423
                                                                                                                                                                                                                                                                                                                                303
                                                                                                                                                                                                                                                                                                                                                                                                                                183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 15
AR054309
LOCUS
DEFINITION
ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORIGIN
                                                                           g
                                                                                                                            ద
                                                                                                                                                                           g
                                                                                                                                                                                                                           원
장
                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                           셤
            8 6
                                                                                                                                                                                                      Ś
                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                          8
                                                                                                    ò
                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                      ठे
                                                                                                                                                                                                                                                                                                                                               õ
                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               જ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠ
                                                                                                                                                                                                                                                                                                                                                                     1466
                                                                       1106
                                                                                              1624
                                                                                                                       1166
                                                                                                                                                                      1226
                                                                                                                                                                                             1504
                                                                                                                                                                                                                                                                                                                     1406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1946
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2006
ATGTATGGCCCTACTACAGGCGATAAAGTGAGATTGGGCGATACAGACTTGATCGCTGAA 1744
                                                                                                                                                                                                                                                                                             1384
                                                                                                                                                                                                                                                                                                                                           1324
                                                                                                                                                                                                                                                                                                                                                                                           1264
                                                                                                                                                                                                                                                                                                                                                                                                                     1204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACA 1646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1083 TTGAATGAAGCCGGTTGCGTGGAAGACACTATGGCAGCTATTGCCGGACGCACTATGCAC 1024
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCAGAACACTTAGACATGCTCATGACATGCCACCCTAGACAAACGCATCCGCGAGGAT 1886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          964
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GAACACAAACATTCTTCCCGCTTCCACTAACCCCACTATCCCTTTCACTGTGAATACAGAA 904
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          844
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          784
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         724
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         664
                                     GGTATTGACACACACATCCACTTCATTCACCCCAACAAATCCCTACAGCTTTTGCAAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACTITCCACACTGAAGGTGCTGGCGGCGGACACGCTCCTGATATTATTAAAGTAGCTGGT
                       GTAGAACATGACTATACCACCTATGGCGAAGAACTTAAAATTTGGCGCGGGTAAAACTATC
                                                                       CGTGAGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCACT
                                                                                    AGAGAAGGCATGAGCAATCCAACAACCTAGCAAAGAAGAATTGGATCTAATCATCACT
                                                                                                                      AACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGC
                                                                                                                                   AAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCAT
                                                                                                                                                                                                                     ATGGTCGTCGTCGTCGCCACACACACTACCACGCGCAAGGTATGATTACCCCCTCCC
                                                                                                                                                                                                                                     CTTAGCGTAGGTCCTGCTACTGAAGCCTTAGCCGTGAAGGTTTGATCGTAACTGCTGGT
                                                                                                                                                                                                                                                                      GGAATCGATTCACACCCCCCCTTTCTCCCACACAATTCCCTACCGCTCTAGCCAAT
                                                                                                                                                                                                                                                                                                                     GGCGTTACAACCATGTTTGGAGGCGGCACAGGTCCTGTAGATGCGAATGCGACTACT
                                                                                                                                                                                                                                                                                                                                     ATCACTCCGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTATTCTATG
                                                                                                                                                                                                                                                                                                                                                                                 AACTTAGGTTTCTTGGCTAAAGGTAACGCTTCTAACGACGCGAGCTTAGCCGATCAAATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAAGCTGGTGCGATTGGCTTTAAAATCCACGAAGACTGGGGCACCACTCCTTCTGCAATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GAGCTCAATATTCTACCCTCCTCCACCCCCCACTATTCCCTATACCATTAATACGGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GCAGAACACATGGACATGCTTATGGTGTGCCACCACTTGGATAAAAGCATTAAAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TTACAATTTTCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAAATCGCTGGCATTGGTAAAGGCGGTAACAAAGACATGCAAGATGGCGTTAAAAACAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1647
                                                                       1047
                                                                                               1683
                                                                                                                                                                                                                      1227
                                                                                                                                                                                                                                                                                              1443
                                                                                                                                                                                                                                                                                                                      1347
                                                                                                                                                                                                                                                                                                                                             1383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1587
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1023
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           963
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2007
                                               1743
                                                                                                                       1107
                                                                                                                                              1623
                                                                                                                                                                       1167
                                                                                                                                                                                               1563
                                                                                                                                                                                                                                              1503
                                                                                                                                                                                                                                                                      1287
                                                                                                                                                                                                                                                                                                                                                                     1407
                                                                                                                                                                                                                                                                                                                                                                                             1323
                                                                                                                                                                                                                                                                                                                                                                                                                     1467
                                                                                                                                                                                                                                                                                                                                                                                                                                           1263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1527
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1767
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1827
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          903
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          843
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         723
                       987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1707
셤
                      8 8
                                                                                        g
                                                                                                                     8 8 8
                                                                                                                                                                                        QQ
                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                      8 &
                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                      DP
                                                                                                                                                                                                                                                                                                                                                                                                                                     ద
                                                             8
                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                             õ
                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         & 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                පි ර
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               品 名 品 名
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8 6 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
```

29-SEP-1999

PAT

ų,

38;

241 137 301

2486

244

1275 GGTGTAACAACCATGATTGGTGGAAGCGGTCCTGC	1407 ATCACTCCGGGCAATGGAACTTGCACCCCATGTTGCG 1335 ATCACTCCAGGCAGAAGAAATTTAAAATGGATGCTCAG	1467 AATGTGGGCTTTTTGGGCAAAGGCAATAGCTCTAGCAA 1395 AATTTAGGTTTCTTGGCTAAAGGTAACGCTTCTAACGA	1527 GAAGGGGGGGGATTGGTTTTAAATTGCATGAAGACTG	1587 GATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCA	1647 GTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGC 	1707 GCCTACCACATTGAGGAGGGGGGTGGAGGACACTCACC 1635 ACTTTCCACACTGAAGGCGCTGGCGGCGGAGAGCGCTCC	1767 GAGCTCAATATTCTACCCTCCACCACCCCCACTAT	1827 GCAGAACACTTAGACATGCTCATGACATGCCACCACCT	1887 TTACAATTTTCTCAAAGCCGTATCCGCCCCGGCTCTAT	1947 GATAIGGGIGIGAICGCGAIGACAAGCICGGAITCGCA 	2007 GTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAA	2067 GAAGATGGCAAAGATAACGATAATTTCCGCATTAAGCG 	2127 AACCCCGCTTTGACCCACGGGGTGAGGGAGTATATCGG	2187 GCCGACTTGGTGGTGGAATCCTGCCTTTTTTGGCGT	2247 GGCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAA 	2307 CCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAA. 	2367 ACTITIGITICCAAAGTCGCCTATGAAATGGCGTGAA [2427 CAAGTTCTACCGGTCAAAAACTGCCGTAACATCACCAA
qa .	දු පු	& B	\$ A	o d	è 8	& A	& 43	S S	<u>ጵ</u>	상 원	8 &	ò 8	දි පි	ò a	රු සි	පි පි	& a	රු පු
198 GTAGAAGCAGTAGCTTTGATTAGTGCCCCATATTATGGAAGCGAGGGCTGGTAAAAAG 257	362 ACCGTGCCCAGCTTATGGAAGAGTGCATGCACTTTTTGAAAAAAGAGATGAAGGACC 421		CTTGTAACTGTGAATTGGCCCATCGAACCAGTGAGCACTTCAAAGCGGGCGAAGTGAAA [578 CICGIANCCGIGCAIRCCCCIAITGAGGCCAAIGGIAAAITAGITCCIGGIGAGGIGGGGGGGGGG	ACTAATGAAGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAAC		AACACGCTACGCATTGGGGCAGGACCACCGCAAAGGCCAGTTGGTTCCTCTTGGTGGC			ATCAAGTAAGGAGACTCCCATGAAAATGAAAAAACAGAATATGTAAAAT ATCAAGTAAGGAGACTCCCATGAAAATGAAAAAAAAAA	ACCTACGGACCCACAAAGGCGATAA	AISTALOSICCIACIACAGOCONIAMOSTGAGAIIGGGCGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	1047 CGTGAGGGTATGGGTCAATAGCCCTGATGAAACACCCTAGATTTAGTCATCACT 106	AACGCCATGATTATCGACTACACGGGATTTACAAAGCCGACATTGGGATTAAAAAACGGC 		ATGGTCGTGGGGTACAGAAGCACTAGCAGGGAAGGTATGATTACCGCTGGG 	1287 GGAATCGATTCACACCCACTTCCTTCTCCACAACAATTCCCTACCGCTCTAGCCAAT 1346	
Ωp	& g	۶ ج	3 6	3 6 8	۸ ا	oy Ob	۶ d	\$ B	ે ક	8 8 8	3 8 8	8 & 8	<i>₹</i> 8	& g	Š d	\$ A	\$ a	ò,

AACGCGTCTGTGCCCACTCCCCAA 2306 AGGAAAGACTTCAAGTTCAACGAC 2486 CAAGTTTGTATCCACACCGATACA 1646 CCTGATGTTATCACCATGGCAGGC 1766 CTAGACAAACGCATCCGCGAGGAT 1886 CAAGCAATGGGCGTGCAGGCGAA 2006 AAAAAAGAATTTGGTAAGCTTCCT 2066 TAAAACCCAAAATCGTGATCAAA 2246 AGGCGAAATTTGACACCAGCATC 2366 AAAGAAAAGCTGGGCTTAGAGCGC 2426 AAAGAAGAATTAGGACTTGAAAGA 2354 AAAAACAACTTGTAGAACAAGTA 1526 SCAATGAACGGGCGCCCATCCAT 1706 ATTCCCTATACCATTAATACGGTT 1826 ATTGCGGCTGAAGATGTGCTCCAT 1946 SCCTCTGTGGAAGAGGCCAAGATC 2186 HOCGAGCTTAGCCGATCAAATT 1454 SGCTACATCTCCAAATACACTATC 2126 SCTGATGGCACTAATGCGACTACT 1334 GCGCAGCAGAGAGTATTCTATG

Search completed: November 29, 2005, 04:30:37 Job time : 14066 secs

÷.

```
November 28, 2005, 23:31:00; Search time 10210 Seconds (without alignments) 13211.279 Million cell updates/sec
                                                                                                                                                                                                      1 rggragattttccarcactt.....aaaaaagtagaagccacagg 2883
                                                                                                                                                                                                                                                                                                                             82156643
GenCore version 5.1.6
Copyright (c) 1993 - 2005 Compugen Ltd.
                                                                                                                                                                                                                                                                                           41078325 seqs, 23393541228 residues
                                                                                                                                                                                                                                                                                                                           Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                              Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                   OM nucleic - nucleic search, using sw model
                                                                                                                                                                                                                                         IDENTITY NUC Gapox 1.0
                                                                                                                                                                                                                                                                                                                                                             Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                    US-09-904-994B-1
2883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9b_est1::

9b_est2::*

9b_htc::*:

9b_est4::*

9b_est5::*

9b_gss1::*

9b_gss1::*

9b_gss2::*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EST:*
                                                                                                                                                                        Title:
Perfect score:
                                                                                                                                                                                                                                         Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Database :
                                                                                                                                                                                                           Sequence:
                                                                                                                                                                                                                                                                                             Searched:
                                                                                                     Run on:
```

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

					SUMMARIES	
Result		ouerv				
No.	Score	Match	Match Length	B	a	Description
н	327.4	11.4	958	œ	DR637438	DR637438 EST102806
7	324.2	11.2	946	œ	DR637093	DR637093 EST102771
m	310.2	10.8	1509	4	CNS0ABR8	BX816461 Arabidops
4	309	10.7	872	7	CO122599	CO122599 GR ED04F
ď	306.2	10.6	925	œ	DR633422	DR633422 EST102404
9	302.2	10.5	748	ω	CX676965	CX676965 ydd29h04.
7	299.2	10.4	889	ω	DR637386	DR637386 EST102801
80	296.4	10.3	196	œ	DR633939	DR633939 EST102456
σ	292	10.1	849	ω	DR635599	DR635599 EST102622
10	279.6	9.7	166	7	CV195867	CV195867 CGF100344
c 11	274.2	9.5	986	9	CF826586	CF826586 EST703968
c 12	273	9.5	784	σ	AZ935182	
c 13	262.6	9.1	066	7	C0027797	C0027797 EST806181
14	261.2	9.1	684	7	CN907928	CN907928 030109ABL
c 15	261	9.1	921	9	CF714848	CF714848 CCAF343TO
c 16	261	9.1	946	œ	DN809412	DN809412 73954613
17	259.6	9.0	713	7	CK757406	CK757406 atr02-4ms
18	258.2	9.0	689	œ	DR440006	DR440006 EST149 09
19	255.2	ø.	781	œ	DR916924	DR916924 EST110846
20	254.8	8.8	863	9	CD375065	CD375065 PTMM00226
21	254.4	8.8	945	œ	DN808832	DN808832 76945303
22	249.4	8.7	757	ហ	BU027777	BU027777 QHG7L07.y

CA264652 SCQGLB204 CN908212 030109ABL CR708414 CCARR70TR CA236757 SCEQFL505 CV902222 PD019F1 m AG940016 Drosophil DN810553 76954039 BG887260 EXT511111 CF689903 CCADS40TF CN910029 030124ABL CX557362 yda35h11. AW518902 EXT32688 CF690511 CCAAZ91TR AZ935008 BJ BA000 BZ572656 msh2 2738 CF706674 CCAF838TO AZ93571 BJ BA000 BZ572656 msh2 2738 CF706674 CCAF838TO AZ93573 BJ BA000 BG531733 131F03 Ma AW618900 EST320886 AG941093 Drosophil
CA264652 CN908212 CA236751 CV902222 AG902016 DN810553 BG887260 CK563903 CN56851837 CN56851837 CN56851837 CN56674 AZ935008 AZ935008 AZ935008 AZ935008 AZ935008 AZ935008 AZ935008 AZ935008 AZ935008 AZ935008 AZ935008 AG941033 AG941093
0110 1010 1010 1010
905 661 786 692 692 693 634 934 747 747 660 1260 1260 750 890 693 663 663 663 663 747 747 747 747 750 890 890 890 890 890 890 890 890 890 89
@@@@@@@@@@@\\\\\\\\\\\\\\\\\\\\\\\\\\\
2.20
00000000000000000000000000000000000000
0 0 0 0 0 0 0 0

ALIGNMENTS

```
1209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ~
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  182
                                 LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bource
                                                                                                                                                 ORGANISM
                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                  AUTHORS
                                                                                                                                                                                                                                                                                                  JOURNAL
                                                                                 ACCESSION
 RESULT 2
DR637093
                                                                                                VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                 TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ሯ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                    1268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1748
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1928
                                                                                                                                                                                                 ATGATTATTACCGCTGGGGAATCGATTCACACACCCCACTTCCTTTCTCCACAACAATTC 1328
                                                                                                                                                                                                                                                                 CCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGTCCTGTAGAT 1388
                                                                                                                                                                                                                                                                                                                                  GGCACGAATGCGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAA 1448
                                                                                                                                                                                                                                                                                                                                                                                                 1449 GCAGAAGAGTATTCTATGAATGTGGGCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAAA 1508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1509 CAACTIGIAGAACAAGIAGAAGCGGGCGCGATIGGITTTAAATIGCAIGAAGACTGGGGC 1568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1569 ACAACACCCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTT 1628
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATG 1688
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GTTATCACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCACCCCCCACTATTCCC 1808
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAAGCTCGGATTCGCAAGCA 1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAA 2048
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               901
                                                                                                                                                                                                                                                                                                                                                                182 GGAACGAACGCAACTACTTGTACGCCTGGTGCTCATTACATGCGTCAAATGTTGCAGGCG 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                722 GCTGAGGATGTATTACACGACAAAGGCGCTATCAGCATGATGAGCTCTGACTCGCAGGCT 781
                                                                                                                                                                                                                                 AAGATTGTGACCGCGGCGCTATCGACACGCATATTCACTTTATCTGCCCTCAGCAAGTA 121
                                                                                                                                                                                                                                                                                                  CCCGAAGCTCTTGCATCTGGTGTAACCACCATGCTTGGCGGTGGTACCGGCCCAAGTGCT 181
                                                                                                                                                                                                                                                                                                                                                                                                                                 TGCGATCAGCTTCCTATCAATATTGGTATTACTGGCAAAGGTAATGATAGTTCTCCTGAG 301
                                                                                                                                                                  61
   ×
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GGTCTGCGCGATCAGGTCAATGCTGGTGCTTTGTGGCCTCAAGCTTCATGAGGACTGGGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               criaircacacidacaceciraacaacicicideciridicaarcracaicarcecientre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AACGGGCGCGCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCACCCTAGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAACGCATCCGCGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCGGCTCTATCGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 662 AAGAATATCCCAGAGGATGTAGCCTTCGCGGAGAGCCGTATTCGTGCTGAAACCATTGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATGGGCCGTTGCGGAGAGGTCGTTTTAAGAACATGGAATACTGCGCATAAAAATAAGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GAATTTGGTAAGCTTCCTGAAGATG--GCAAAGATAACGATAATTTCCGCATTAAGCGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 842 CAGAGGGGTTGCCCGCAGGATGAAGGCACAGGGGCTGATAATGCGCGTGTAAACGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATCATCTCCGTGGTAGAGCATCAAAATGTTCTGCCATCATCGACCAACCTACAAGACCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                rrcacaccantacrercangacarcregararderrarderergecarcacrigeree
                                                                                                                                                                 GACGGCGTAACAGAGGCCATGGTCGTCGAAGCTGCACGGATGTCGTAGCAGGTGAAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                recacrecrecretrinaacecriterereagicarenearisaarreaarer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAGAACCGCACAATTCATATCACACAGAGGTGCAGGAGGTGGCCATGCTCCGGAT
                                                                                                                                  GATGGCGTAAGCCCTCATATGGTCGTGGGTGTGGGCACAGAAGCACTAGCAGGGGAAGGT
                                                                                                    Gaps
directionally ligated into the pBlueScript II SK(+) vector (cDNA Synthesis Kit; Stratagene)."
                                                                                                    7
                                                                   958;
                                                                Score 327.4; DB 8; Length
Pred. No. 3.5e-70;
0; Mismatches 376; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACATCTCCAAATACACTATCAACCCCGCTTTGACCCACGGCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               11.4%;
59.9%;
                                                                                 Best Local Similarity 59.99
Matches 565; Conservative
                                                                                                                                                                                                                                                                                                                                1389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1749
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1869
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2107
                                                                                                                                                                 ~
                                                                                                                                                                                                 1269
                                                                                                                                                                                                                                                                 1329
                                                                                                                                                                                                                                                                                                                                                                                                                                 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1929
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                782
                                                                                                                                  1209
                                                                                                                                                                                                                                 62
                                                                                                                                                                                                                                                                                                122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 302
                                                                   Query Match
                                   ORIGIN
                                                                                                                                                             g
                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                ò
                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                               ò
```

```
946 bp mRNA linear EST 11-JUL-2005 FvM Gibberella moniliformis cDNA clone FVMAT95, mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATGATTATTACCGCTGGGGAATCGATTCACACCCCCCTTTCTCCACAACAATTC 1328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGTCCTGTAGAT 1388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1389 GGCACGAATGCGACTACTATCACTCCGGGCAAATGGAACTTGCACGCATGTTGCGCGCA 1448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1449 GCAGAAGAGTATTCTATGAATGTGGGCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAAA 1508
                                                                                                                                                                                                                                                   Lee, Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CCCGAAGCTCTTGCATCTGGTGTAACCACCATGCTTGGCGGTGGTGCTGGCCCAAGTGCT 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             aadarrigrigacciciodedeceraricaceacecararricacrifraricrigecerecaecaagra 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        242 IGCGATCAGCTICCTAICAATAITGGIAITACTGGCAAAGGIAATGAIAGTICTCCTGAG 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                             Brown, D.W., Cheung, F., Proctor, R.H., Butchko, A.E., Zheng, L. Lee, N. Utterback, T., Smith, S., Feldblyum, T., Glenn, A.E., Plattner, R.D., Kendra, D.F., Town, C.D. and Whitelaw, C.A.
Analysis of 87,000 expressed sequence tags reveals alternatively spliced introns in multiple genes of the fumonisin gene cluster Unpublished (2005)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGAACGAACGCAACTACTACGCCTGGTGCTCATTACATGCGAAATGTTGCAGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GATGGCGTAAGCCCTCATATGGTCGTGGGTGTGGGCACAGAAGCACTAGCAGGGGAAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GACGGCGTAACAGAGGCATGGTCGTCGGAAGCTGCACGGATGTCGTAGCAGGTGAAGGA
                                                                                                                                                                              Eukaryota; Fungi; Ascomycota; Pezizomycotina; Sordariomycetes;
Hypocreomycetidae; Hypocreales; Nectriaceae; Gibberella.

    (bases 1 to 946)

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 946;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                       USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   'organism="Gibberella moniliformis"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 324.2; DB 8;
Pred. No. 2.2e-69;
0; Mismatches 378;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       IL 61604,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ႘
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAG (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Email: browndw@ncaur.usda.gov
TIGR sequence name: FVMAT95TH
Seq primer: AAT TAA CCC TCA CTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                1815 N. University St. Peoria,
Tel: 309 681 6230
Fax: 309 681 6689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
                                                                                                                                    Gibberella moniliformis
Gibberella moniliformis
                                                                                     GI:70711927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11.2%;
ilarity 59.7%;
Conservative 0
                                                                                                                                                                                                                                                                                                                                                                                   Contact: Brown, D.W. USDA/ARS/NCAUR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity
Matches 563; Conserv
                                                                                        DR637093.1
                         EST1027718
                                                sequence.
  DR637093
                                                                                                                                                                                                                                                                                                                                                                                                                                  USDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
```

```
The sequences are based on single pass reads.

Life Technologies (a division of Invitrogen) members carried out full-length librairies construction: Temple G.
Genoscope members carried out sequencing and annotation: Castelli V. Aury J.M., Jaillon O., Wincker P., Menard M., Cruaud C., Schachter V., Weissenbach J., Salanoubat M.
URGV IRRA: Clepet C., Caboche M.
Annotation is based on the June 2003 version of the Arabidopsis genome released by MIPS (Munich Hoformation center for Protein Sequences). 5 prime and 3 prime are assembled with Phrap.

http://www.genoscope.cns.fr/externe/sequences/Banque_Projet_EF/Full
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2125 TCAACCCCGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGGCAAGA 2184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121 ACATATCACAGTAAAGGTGCTGGTGGACATGCACCAGATATCATTAGAGTTTGTGGA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GATGAACATCTTGACATGCTGATGGTTTGCCATCACCTTGACAAGAACATCCCAGAAGAT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GACAATTGTTTGGCAGTTGCAGAAGAATATGATATCCAGGTGAACATTCATACTGACACC 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61 TIPAATGAATCCGGTTTTGTTGAGCACACTATCAATGCATTTCGTGGGAGAACAATACAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GAGCTCAATATTCTACCCTCCTCCACCACCCCCACTATTCCCTATACCATTAATACGGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1887 TTACAATTTTCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGA-AGATGTGCTCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361 İGATATGGGAĞCAATCAGCATTATCTCCTCCGACTCACAAGCAATGGGTCGCATTGGAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               541 iaaacccadciaiadccaaigdgiingcadaciiaaiigdcicdciidaddaddc
                                                                                                                                                                                                                                                                                http://www.genoscope.cns.fr/cgi-bin/ggb/ggb?source=Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181 Grgaaaaargrachcccgrcarcaaccaacccaacacgccararacgaaaaaracrcra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GCAGAACACTTAGACATGCTCATGACATGCCACCTAGACAAACGCATCCGCGAGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gragorititecteaatcaagaaraagaecteaaacaaragcrecagagagararatteca
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              421 GGTAATAAGCAGAACTTGGCAGACAGCTGACAAGATGAAGGCTCAGAGGGAGCCATTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TGAAGATGGCAAAGATAACGATAATTTCCGCATTAAGC-GCTACATCTCCAAATACACTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          rccraacarggcrgargargarahcrcaaggarcaaggagaracarrgcaaagracacra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2185 TCGCCGACTTGGTGTGTGGAATCCTGCCTTTTTT-GGCGTAAAACCCAAAATCGTGATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            rescrearcristrararescececerrrerresascaaaaacaaaareaaaarearaaare
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1707 GCCTACCACATTGAGGGAGGGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 1509;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Callus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 310.2; DB 4;
Pred. No. 7.7e-66;
0; Mismatches 413;
                                                                                                                                                                                                                                                                                                                                                       /organism="Arabidopsis thaliana"
                                                                                                                                                                                                                                                                                                                                                                                                                                                 /tissue_type="Hormone Treated
/ecotype="Col-0"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /plasmid="pCMVSPORT_6"
                                                                                                                                                                                                                                                                                                                                                                              /mol_type="mRNA"
/db_xref="taxon:3702"
                                                                                                                                                                                                                                                                                                                                                                                                                           clone="GSLTPGH4ZD08"
                                                                                                                                                                                                                                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /gene="At1g67550"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             10.8%;
59.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                    1. .1509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches 602;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1767
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1647
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1946
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1587
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -+
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1827
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                      source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gene
                                                                                                                                                                                                                                                                                                               FEATURES
           COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                     1628
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Arabidopsis thaliana Full-length cDNA Complete sequence from clone GSLTPGH4ZD08 of Hormone Treated Callus of strain col-0 of Axabidopsis thaliana (thale cress).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryofa, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta, Spermatophyta, Magnoliophyta, eudicotyledons, core eudicotyledons, rosids; eurosids II, Brassicales, Brassicaceae, Arabidopsis.

Lases 1 to 1509
Castelli, V., Aury, J.M., Jaillon, O., Wincker, P., Clepet, C., Menard, M., Cruaud, C., Quetier, F., Scarpelli, C., Schachter, V., Temple, G., Caboche, M., Weissenbach, J. and Salanoubat, M. Whole Genome Sequence Comparisons and 'Full-Length' cDNA Sequences: A Combined Approach to Evaluate and Improve Arabidopsis Genome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAA 2048
              CAACTTGTAGAACAAGTAGAAGCGGGCGCGATTGGTTTTAAATTGCATGAAGACTGGGGGC 1568
                                                                                                                                                                                               1629 TGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATG 1688
                                                                                                                                                                                                                                                                                                                                                                                   1749 GITATCACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCACCACCACTATTCCC 1808
                                                                                                                                                                                                                                                                                                                                      541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Submitted (18-NOV-2003) Genoscope - Centre National de Sequencage :
BP 191 91006 EVRY cedex - FRANCE (E-mail : seqref@genoscope.cns.fr
- Web : www.genoscope.cns.fr)
                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         722 GCTGAGGATGTATTACACGACAAAGGCGCTATCAGCATGATGAGCTCTGACTCGCAGGCT 781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 782 Ariegicicerrecicadadercerritaagaacariegaaracrecicerraaaaaraaacre 841
                                                                                                                                                                                                                                            422 CTTATTCACACTGACACGCTTAACGAGTCTGGCTTTGTCGAATCTACGATCGCTGCTTTC 481
                                                                                                                                                                                                                                                                                                                                                                                                                              542 ATCATCTCCGTGGTAGAGCATCAAAATGTTCTGCCATCGTCGACCAACCCTACAAAGACCA 601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        602 TTCACACGCAATACTCTCGATGAGCATCTCGATATGCTTATGGTCTGCCATCACTTGTCC 661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  662 AAGAATATCCCAGAGGATGTAGCCTTCGCGGAGAGCCGTATTCGTGCTGAAACCATTGCT 721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             842 CAGAGGGGTTGGTTGCCGGAGGATGAGGGCACAGGGGCTGATAATGCGCGTGTAAACGCT 901
                                                                                                                                                                                                                                                                                       AACGGGCGCCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCACCACCTAGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAACGCATCCGCGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCCGGCTCTATCGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GCTGAAGATGTGCTCCATGATATGGGTGTGATCGCCGATGACAAGCTCGGATTCGCAAGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2049 GAATTTGGTAAGCTTCCTGAAGAT - GGCAAAGATAACGATAATTTCCGCATTAAGCGCT
                                                                                                     1569 ACAACACCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTT
                                                                                                                                                  362 TGCACTCCTGCTGCTATTGACGCTTGTCTCAGTGTCTGTGAATGCAATTCGATATTCAATGT
                                                                                                                                                                                                                                                                                                                                      482 AAGAACCGCACATTCATACTTATCACACAGAGGTGCAGGAGGTGGCCATGCTCCGGAT
                                                        GGTCTGCGCGATCAGGTCAATGCTGGTGCTTGTGGCCTCAAGCTTCATGAGGACTGGGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       944
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2107 ACATCTCCAAATACACTATCAACCCGGCTTTGACCCACGGCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  902 ArgreageAagharacharhaceceagenarracheagachr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BX816461.1 GI:42471655
HTC, GSLT. CDNA.
Arabidopsis thaliana (thale cress)
Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (bases 1 to 1509)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Annotation
Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Genoscope
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1989
                                                                                                                                                                                                                                                                                         1689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1869
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1929
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 3
CNSOABR8
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE
              ò
                                                 g
                                                                                                     ð
                                                                                                                                      a
                                                                                                                                                                                      ò
                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                       ઠ
                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
```

Gaps

1945

420

2124

540

2243

999

1886

1826

61

241

421

481

541

```
925 bp mRNA linear EST 11-JUL-2005 Gibberella moniliformis cDNA clone FVMA534, mRNA
                                                                                                                                                                                                                                                                                                          AGCAAAAAACAACTTGTAGAACAAGTAGAAGCGGGCGCGATTGGTTTTAAATTGCATGAA 1559
                                                                                                                                                                                                                                                                                                                                                                                     1560 GACTGGGGCACAACACCCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGAT 1619
                                                                                                                                                                                                                                                                                                                                                                                                                                                               1620 GTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTA 1679
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1680 AATGCAATGAACGGGCGCCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGACAC 1739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TCACCTGAIGTTATCACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCACCCCC 1799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCAC 1859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCGGC 1919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAAGCTCGGAT 1979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AATAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATT 2099
                                                                                                                                                                                                                              TTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTTGGGCAAAGGCAATAGCTCT 1499
                                                                                                                                                                                                                                                                                                                                                                                                             cagringericargaagcrariticaagridgearcaacarragringeaggridgaagccga 121
                                                                                                                                                                                        122 CCAGCTGAAGGAACACGTGCAACTTGTACGCCAGCTCCGTCGCAAATGAAATGATGATGATG
                                                                                                                                                                                                                                                                                                                                              AAACCTGAAGAATACATGAAATAATCAAAGCCGGAGCAATGGGACTGAAACTGCATGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    rcacaggicariogercarrogcoaggicararocagaactrogcaaaccoccacaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                782 ATGAAATCACAAAGGGGACCACTTGGTCCTGCAGACTCAGACAACGACAATCTAAGAATC 841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           662 ACCATTGCTGCCGAAGACATATTGCATGACACAGGGGCAATCAGCATTATATCTTCAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               caccircagcaaaggarairccrgaagargragcaririgcagaarcaaggairaggggggaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAG
                                                                       CAACAATTCCCTACGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGT
                                                                                                                                                                                                                                                                    182 CTGCAGTCCACTGATGACTTCCCTCTAAATTTTTGGCTTCACAGGGAAGGGAAATGGTTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Arccaagitaatatrcatactcacaccrtgaaccaarctgaatrtgagatrtgaacaaatr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GCTCCAGATATCATCAAGTATGTGGCGTTAAAAAGGTCCTCCCTTCGTCAACAAACCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    acrosocorranacraracraradarearcarcrasacrascrarecrarecrar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gibberella moniliformis
Gibberella moniliformis
Bukaryota; Pungi; Ascomycota; Pezizomycotina; Sordariomycetes;
Hypocreomycetidae; Hypocreales; Nectriaceae; Gibberella.
GGGGAAGGTATGATTATTACCGCTGGGGGAATCGATTCACACACCCCACTTCCTTTCTCCA
                                                                                                                                                       CCTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATG
                                 GGAGAAGGATTGATCGTAACTGCAGGGCTATTGACTGTCATGTGCATTTCATATGTCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAACGTTATATAGCAAATACACCATAAA 870
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAGCGCTACATCTCCAAATACACTATCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FVM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DR633422
EST1024047 Bequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DR633422.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DR633422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    542
1260
                                     N
                                                                           1320
                                                                                                                                                     1380
                                                                                                                                                                                                                                1440
                                                                                                                                                                                                                                                                                                          1500
                                                                                                                                                                                                                                                                                                                                                242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              842
                                                                                                               62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 5
DR633422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                               셤
                                                                                                                                                   8
                                                                                                                                                                                     용
                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                 원
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                         ठे
                                                                                                                                                                       2423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                            2424 CGCCAAGTICTACCGGTCAAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCAAC 2483
                                                                                                                                                                                                                                                                                                                          GACAAAACGGCAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAA 2543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           872 bp mRNA linear EST 16-JUN-2004
Eb Gossypium raimondii cDNA clone GR_Eb04F01 5',
                                                                                           CAACCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGC 2363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, eudicotyledons, core eudicotyledons,
rosids, eurosids II; Malvales, Malvaceae, Malvoideae, Gossypium.
                                                                                                                                                                                                            840
                                                                                                                                                                                                                                                                                                                                                                  960
                                                                                                                                                                                                                                                                                                                                                                                                                             GTCCTTAGCATGGGGCCAGCCGATTCAGTCCCTCTGCGCGCGGAACTATTCCTCT 1019
                                         2544 CT-CTGCACCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTCT 2601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /tious=_var_con_revar
/tissue_type="floral"
/dev_stage="3 to +3 DPA"
/lab_host="DH10B"
/clone_lib="GR_Eb"
/note==Vector: pGNV.SPORT-6.1; Site_1: NotI; Site_2:
ECGRV; Library made by Invitrogen with RNA supplied by
Wendle lab. Directional cloned into NotI-EV. Colonies
plated/picked by AGI. More glycerol clones held in -80.
                                                                                                                                                                                                                                                                                                                                                    GTTGCATTTGTCAGCAAGGCTGCCTTGAGAAGGGGGTAAAAGAAGTATATGGACTCAAG
                                                                                                                                                                                                                                                                                      841 AAGAGGTTGTAGCGGTGTCCAACGTGAGGCAGCTCACAAAACTCGACATGAAGCTGAAT
                                                                                                                               GAGCCGGTGATATCAAGACCTATGTTTGGAGCATTTGGAAAGGCCGGAAGTGAAAACTCT
                                                                                                                                                                     2364 ATCACTITIGITICCAAAGICGCCTAIGAAAAIGGCGIGAAAGAAAAGCIGGGCTIAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 (bases 1 to 872)
Kim,H., Yu,Y., Kudrna,D., Hatfield,J., Stum,D., Mueller,C.,
Udall,J.A., Rapp,R.A., Wendel,J.F., Rao,K., Soderlund,C. and
Wing,R.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
10.7%; Score 309; DB 7; Length 872;
Best Local Similarity 59.7%; Pred. No. 1.3e-65;
Matches 519; Conservative 0; Mismatches 350; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   85721-0036,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Global assembly of Cotton EST6
Unpublished (2004)
Unpublished (2004)
Contact: Rod A. Wing
Arizona Genomics Institute
The University of Arizona
Tel: 520 626 9595
Fax: 520 621 1259
Email: ruing@genome.arizona.edu
Plate: 04 row: F column: 01.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /organism="Gossypium raimondii"
/mol_type="mRNA"
/db_xref="taxon:29730"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              'clone="GR Eb04F01"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CO122599
CO122599.1 GI:48821286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            raimondii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gossypium raimondii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GR Eb04F01.f G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gossypium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EST
                                                                                           2304
                                                                                                                                                                                                                                                                                                                            2484
                                                                                                                                 721
                                                                                                                                                                                                                                                                                                                                                                901
                                                                                                                                                                                                                                                                                                                                                                                                                                           961
                                                     661
                                                                                                                                                                                                          781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CO122599
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                        d
                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                       d
                                         qq
                                                                                                                     g
                                                                                                                                                               ઠે
                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                        δ
                                                                                   ઠે
               ઠ
```

2039

721

```
CCACCCCCACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /lab_host="DH10B"
/clone_lib="Sea urchin EST Libl"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DNA sequencing by: Washington University
Seg primer: -28RPpOT
High quality sequence stop: 680.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /mol_type="mRNA"
/db_xref="taxon:7668"
/clone="ydd29h04"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Email: est@watson.wustl.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CX676965.1 GI:57936920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CCTGCCTTTTTGGC 2222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         910 ccrecerecriedec 924
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Wilson, R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CX676965
                                                                                                                                                                                                                                                                                                                 2032
    1792
                                                                                                                                                                                                                                      1972
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 6
CX676965
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMMENT
                                                                                                                                                                                          염
                                                                                                                                                                                                                                                                    유
                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                              셤
                                                                              ò
                                                                                                        셤
                                                                                                                                              ઠે
                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                             /clone="ryMA534"
/tissue type="mycelia"
/tissue type="mycelia"
/clone_Tib="ryM"
/note="Yector: pBlueScript II SK(+) XR; Site_1: EcoRI;
/site_2: XhoI; anamorph: Fusarium verticillioides. Library
FvM was prepared from pooled RNA obtained from a 48-hour
and a 72 hour, liquid GYAM culture from strain M-3125.
Cultures were vacuum filtered and the mycelial mats were
frozen in liquid nitrogen, ground to a powder, and then
added to TRIzol Reagent (Invitrogen, Carlsbad CA) at
approximately 1 g mycelia per 10 ml TRIzol. The cDNA was
directionally ligated into the pBlueScript II SK(+) XR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1312 TTTCTCCACAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCG 1371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TGCATGAAGACTGGGGCACACACCCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATG 1611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AATACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTAGATG 1671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1672 ACACCCTAAATGCAATGAACGGGCGCGCCATCCATGCCTACCACATTGAGGGAGCGGGTG 1731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1732 GAGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCA 1791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1372 GCACAGGTCCTGTAGATGGCACGAATGCGACTACTATCACTCCGGGGCAAATGGAACTTGC 1431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1432 ACCGCATGTTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTTGGCCAAAGGCA 1491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               130 Grcaaangrigcaggcgrgcgarcagcriccrarcaararragrarragcaaaggra 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               250 TTCATGAGGACTGGGGTTGCACTCCTGCTATTGACGCTTGTCTCAGTGTCTGTGATG 309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           310 AATTCGATATTCAATGTCTTATTCACACTGACACGCTTAACGAGTCTGGCTTTGTCGAAT 369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      430 GTGGCCATGCTCCGGATATCATCTCCGTGGTAGAGCATCAAAATGTTCTGCCATCATCGA 489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  69
                    Brown, D.W., Cheung, F., Proctor, R.H., Butchko, A.E., Zheng, L. Lee, J. Utterback, T., Smith, S., Feldhlyum, T., Glenn, A.E., Plattner, R.D., Kendra, D.F., Town, C.D. and Whitelaw, C.A.
Analysis of 87,000 expressed sequence tags reveals alternatively spliced introns in multiple genes of the fumonisin gene cluster Unpublished (2005)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Argaragirerecreagegreiececearcageieaarecreerecreererereaee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TCTGCCCTCAGCAAGTACCCGAAGCTCTTGCATCTGGTGTAACCACCATGCTTGGCGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                10.6%; Score 306.2; DB 8; Length 925; 59.9%; Pred. No. 6.7e-65; ive 0; Mismatches 363; Indels 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          vector (cDNA Synthesis Kit; Stratagene).
                                                                                                                                                                                                                                                                                                                                                         /organism="Gibberella moniliformis"
                                                                                                                                                                                                  61604,
                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                            1815 N. University St., Peoria, IL 61
Tel: 309 681 6230
Fax: 309 681 6689
Email: browndw@ncaur.usda.gov
TIGR sequence name: FVMA534TH
Seq primer: AAT TAA CCC TCA CTA AAG
                                                                                                                                                                                                                                                                                                                                                                                                                 xref="taxon:117187"
                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                           /mol_type="mRNA"
/strain="m3125"
                                                                                                                                        Contact: Brown, D.W. USDA/ARS/NCAUR
      (bases 1 to 925)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      548; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                USDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1612
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Best Local
Matches 54
                                                                                                                                                                                                                                                                                                                                         source
    REFERENCE
AUTHORS
                                                                                                                    JOURNAL
                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                TITLE
                                                                                                                                        COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
```

```
2088
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2031
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EST 19-JAN-2005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CX676965 748 bp mRNA linear EST 19-JAN-2005 ydd29h04.y1 Sea urchin EST Libl Strongylocentrotus purpuratus CDNA clone ydd29h04 5' similar to TR:Q9SR52 Q9SR52 PUTATIVE UREASE. ;,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Strongylocentrotidae, Strongylocentrotus.

1 (Dases 1 to 748)
Coffman, J.A., Robertson, A.J., Clifton, S., Pape, D., Hillier, L.,
Martin, J., Wylie, T., Dante, M., Meyer, R., Theising, B., Bowers, Y.,
Gibbons, M., Ronko, I., Tsagareishvili, R., Ritter, E., Kennedy, S. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               730 CGCATAAAATAAGGTGCAGAGGGGTTGGTTGCCGGAGGATGAGGGCACAGGGGCTGATA 789
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Center
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="Vector: pCMVSport6.1 (Invitrogen); Site_1: Not1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   790 ATGCGCCTGTAAAACGCTATGTCAGCAAGTATACTATTAACCCAGGCTATTGCTCAGGGCT
490 ccaacceracaagaccarreacacacaaracecrecardagacareredararderrarde
                                                                                                                                                                                                                                                                                                         550 rerideciarcia recensiona ratrice a de de deserta de la recensión de la rec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             670 gcicreacroccacecrarescorrecesaeaegrocrirraaeaacaresaaracre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CGGATAAGAATAAAAAGAATTTGGTAAGCTTCCTGAAGAT---GGCAAAGATAACGATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2089 ATTTCCGCATTAAGCGCTACATCTCCAAATACACTATCAACCCCGGTTTGACCCACGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2149 TGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGATCGCCGA-CTTGGTGTGTGTGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  850 TTGGACATGTCATTGGGAGCATTGAGGTTGGAAAGTTTGCTGATCTTGTTCTTTTGGGAT
                                                                                                                                                                1852 CATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAAAGCCGTATCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1912 GCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  610 GIGCIGAAACCATIGCIGCIGAGGAIGTATTACACGACAAAGGCGCTATCAGCATGAIGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Echinozoa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequencing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             63108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Location/Qualifiers
1. .748
/organism="Strongylocentrotus purpuratus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Strongylocentrotus purpuratus
Strongylocentrotus purpuratus
Eukarryotas, Echinodermata; Eleutherozoa;
Echinoidea; Euechinoidea; Echinacea; Echinoida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mash Caronian ST Project Mash (2004)
Contact: Dr. James A. Coffman
WashU Sea urchin EST Project
WashU Sea urchin EST Project
Hashington University School of Medicine
4444 Forest Park Parkway, Box 8501, St. Louis, I Tel: 314 286 1800
Fax: 314 286 1810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Genome
```

```
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                   Sea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2367
                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            889 bp mRNA linear EST 11-JUL-2005 FvM Gibberella moniliformis cDNA clone FVMAV95, mRNA
                                                                                                                                                                                                                                                                                    CCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGGCG 1767
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  548
                                                                                                                                                                                                                                                                                                                                                68
Site_2: Smal; Arrayed normalized library of full-length cDNAs representing blastula stage transcriptome of the surchin Strongylocentrotus purpuratus, cloned into the vector pCMYSport6.1 (Invitrogen)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGCTCAATATTCTACCCTCCTCCACCACCCCCCTATTCCCTATACCATTAATACGGTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAGAACACTTAGACATGCTCATGACATGCCACCTAGACAAACGCATCCGCGAGGATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                189 ATGAACACCTGGATATGCTCATGGTCTGCCACCATCTTGACAAGAATCTAAAGGAAGACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TACAATTTTCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Trgccrrracagarcrcacarcagagccgaaaccarrccrcagagararccrrcarg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Archidedadecaarcagrafingregectrecearredeagecardedeagereage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGGAAACGCGTGACAACGACCTAAGGGTCAAGCGTTACATTGCCAAGTACACGGTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCCCGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          crdaccrderreredaarecedearrerredaageraaacereaereareareaaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCACTCCCCAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                           cerareachegadegrecadaagaagaagacaceceraacareareagaagaragaged
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            129 recechargraria ecreeres accareca a cece ecerta e a recenta de la rec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATATGGGTGTGATGATGACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGCGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CCGACTTGGTGGTGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCCAAAATCGTGATCAAAG
                                                                                                                                                                                                                                                                                                                                          rchardaarccrecrereredadadadadadcaradcrecrrrrgadedeceecarccaca
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAGATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCCAAATACACTATCA
                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                     ö
                                                                                                                                                                         Length 748;
                                                                                                                                                                                                                                  Indels
                                                                                                                                                                      Score 302.2; DB 8;
Pred. No. 6.3e-64;
0; Mismatches 273;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2368 CTTTTGTTTCCAAAGTCGC 2386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TCTTTGTGTCCAAAGCAGC
                                                                                                                                                                      10.5%;
ilarity 63.1%;
Conservative
                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DR637386
                                                                                                                                                                                                                            466;
                                                                                                                                                                                                                                                                                       1648
                                                                                                                                                                                                                                                                                                                                                                                                        1708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1768
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1828
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2008
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2068
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2308
                                                                                                                                                                                                                                                                                                                                                σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                              69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2248
                                                                                                                                                                         Query Match
                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LOCUS
DEFINITION
                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 7
DR637386
                                                                                                              ORIGIN
                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
```

Gibberella moniliformis Gibberella moniliformis

DR637386.1 EST.

VERSION KEYWORDS SOURCE ORGANISM

ACCESSION

EST1028011 sequence.

```
/tissue types.amycelia"
/clone lib="FvM"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1432 ACCGCATGTTGCGCGCAGAGAGAGTATTCTATGAATGTGGGCTTTTTGGGCAAAGGCA 1491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1612 AATACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTAGATG 1671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1672 ACACCCTAAATGCAATGAACGGGCGCGCCATCCATGCCTACCACATTGAGGGAGCGGGTG 1731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AATTCGATATTCAATGTCTTATTCACACTGACGTTTAACGAGTCTGGCTTTGTCGAAT 369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               69
Eukaryota; Fungi; Ascomycota; Pezizomycotina; Sordariomycetes; Hypotromycetidae; Hypocreales; Nectriaceae; Gibberella.

1 (bases 1 to 889)
Brown, D.W., Cheung, F., Proctor, R.H., Butchko, A.E., Zheng, L. Lee, M. Chterback, T., Smith, S., Feldilyum, T., Glenn, A.E., Plattner, R.D., Kendra, D.F., Town, C.D. and Whitelaw, C.A.
Analysis of 87,000 expressed sequence tags reveals alternatively spliced introns in multiple genes of the fumonisin gene cluster Unpublished (2005)
Contact: Brown, D.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1312 TTTCTCCACAACAATTCCCTACGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               rcroccercageaagracegaagererrecareregreraaceaecarerregeere
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GTACCGGCCCAAGTGCTGGAACGCAACTACTTGTACGCCTGGTGCTCATTACATGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GTCAAATGTTGCAGGCGTGCGATCAGCTTCCTATCAATATTGGTATTACTGGCAAAGGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   rrcardaddacredderrecacrecrecrecrarrandecerrercadrererera
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCACAGGTCCTGTAGATGCGACTACTATCACTCCGGGCAAATGGAACTTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .,
.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 889;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /organism="Gibberella moniliformis"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pred. No. 3.7e-63;
0; Mismatches 353;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 10.4%; Score 299.2; DB 8; 59.5%; Pred. No. 3.7e-63;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ဗ္ဗ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                금
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /mol_type="mRNA"
/strain="m3125"
/db_xref="taxon:117187"
/clone="FVMAV95"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Email: browndw@ncaur.usda.gov
TIGR sequence name: FVMAV95TH
Seq primer: AAT TAA CCC TCA CTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                St, Peoria,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                  USDA
1815 N. University
Tel: 309 681 6230
Fax: 309 681 6689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                N. University
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1. .889
                                                                                                                                                                                                                                                                                                                                                                                                        USDA/ARS/NCAUR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches 524;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1732
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    source
                                                                                                                                                                                                                                                                                                                         JOURNAL
COMMENT
                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                  TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
```

ö

셤

g

ઠે

셤

ò

g

Š

g ò a

δ

g ò 셤

ઠે

```
Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sequence.
                                                                                                                                                                                                                            Local Simi
les 483;
                                                                                                                                                                                                                                                                                                            1243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1723
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1843
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1903
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2023
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           663
                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 9
DR635599
LOCUS
DEFINITION
                                                                                                                                                                                                                            Best Loca
Matches
                                                                                                                                       ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                 ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2088
                                                                                                                                                                    1911
                                                                                                                                                                                                                                                                                 1971
                                                                                                                                                                                                                                                                                                                                                                                                 2031
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATTTCCGCATTAAGCGCTACATCTCCCAAATACACTATCAACCCCGCTTTGACCCACGGCG 2148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EST 11-JUL-2005
FVMA846, mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Lee, Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /tissue type="mycelia"
/clone lib="FvM"
/note="Vector: pBlueScript II SK(+) XR; Site 1: EcoRI;
Site 2: XhOI; anamorph: Fusarium verticillioIdes. Library
FvM was prepared from pooled RNA obtained from a 46-hour
and a 72 hour, liquid GYAM culture from strain M-3125.
Cultures were vacuum filtered and the mycelial mats were
                                                                                                                                                                                                                         609
                                                                                                                                                                                                                                                                                                                                                                                                                                                         729
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         789
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        849
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 (bases 1 to 796)
Brown, D.W., Cheung, F., Proctor, R.H., Butchko, A.E., Zheng, L., Lee, J. Utterback, T., Smith, S., Feldblyum, T., Glenn, A.E., Plattner, R.D., Rendra, D.F., Town, C.D. and Whitelaw, C.A.
Analysis of 87,000 expressed sequence tags reveals alternatively spliced introns in multiple genes of the fumonisin gene cluster Contact: Brown, D.W.
USDA/ARS/NCAUR
GTGGCCATGCTCCGGATATCATCTCCGTGGTAGAGCATCAAAATGTTCTGCCATCATCGA
                                                                                                                                                                                                                         550 rerecearcaerresecas ana processo de la resección de la constante de la con
                                                                                                                                                                                                                                                                                                                                                                                                 GCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                         ecrcreacreceaeceraredecerracedeaeaecererraagaacaredaarace
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CGGATAAGAATAAAAAGAATTTGGTAAGCTTCCTGAAGAT----GGCAAAGATAACGATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   730 cecaraaaaraaegrecaegesireerreceegaegareaegecaegeereara
                                                       CCACCCCCACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGA
                                                                                                         490 CCAACCCTACAAGACCATTCACACGCAATACTCTCGATGAGCATCTCGATATGCTTATGC
                                                                                                                                                                    CATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAAAGCCGTATCC
                                                                                                                                                                                                                                                                                 GCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAA
                                                                                                                                                                                                                                                                                                                                         790 ATGCGCGTGTAAAACGCTATGTCAGCAAGTATAACTATTAACCCAGCTATTGCTCAGGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Fungi; Ascomycota; Pezizomycotina; Sordariomycetes;
Hypocreomycetidae; Hypocreales; Nectriaceae; Gibberella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               796 bp mRNA linear
FvM Gibberella moniliformis cDNA clone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2149 TGAGCGAGTATATCGGCTCTGTGGAAGAGGGCCAAGATCGC 2188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /organism="Gibberella moniliformis"
/mol type="mRNA"
/strain="m3125"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        850 TTGGACATGTCATTGGAAGCATTGAGGTTGGAAGTTTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61604,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Email: browndw@ncaur.usda.gov
TIGR sequence name: FVMA846TH
Seq primer: AAT TAA CCC TCA CTA AAG
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1815 N. University St, Peoria, IL
Tel: 309 681 6230
Fax: 309 681 6689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             xref="taxon:117187"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ′clone="FVMA846"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gibberella moniliformis
Gibberella moniliformis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GI:70708773
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                भु
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DR633939.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DR633939
EST1024564
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DR633939
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 USDA
                                                       1792
                                                                                                                                                                    1852
                                                                                                                                                                                                                                                                                    1912
                                                                                                                                                                                                                                                                                                                                            610
                                                                                                                                                                                                                                                                                                                                                                                                 1972
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2032
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2089
                                                                                                                                                                                                                                                                                                                                                                                                                                                         670
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 8
DR633939
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMMENT
```

```
1362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2022
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DR635599 849 bp mRNA linear EST 11-JUL-2005
EST1026224 FvM Gibberella moniliformis cDNA clone FVMAJ96, mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CCTCCTCCACCACCACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACA 1842
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAAA 1902
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCCGTATCCGCCCCGGCTCTATCGCGCTGAAGATGTGCTCCATGATATGGGTGTGATCG 1962
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTT 1662
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTAC 1782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    662
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  rrcactirarciecececadeaaciaeceaadeiecirecarcideiaaaceeaea 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  rreccesrestracescentrations and reconstruction of the reconstructi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62
frozen in liquid nitrogen, ground to a powder, and then added to TRIzol Reagent (Invitrogen, Carlebad CA) at approximately 1 gmycelia per 10 ml TRIzol. The CDNA was directionally ligated into the pBlueScript II SK(+) XR vector (CDNA Synthesis Kit; Stratagene)."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TTGGAGGCGCCACAGGTCCTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGGGGGAATCGATTCACACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               geacedarerradeacadadadadaaringreacededecerrareaceacara
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1303 CCCACTTCCTTTCTCCACAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 183 ATTACATGCGTCAAATGTTGCAGGCGTGCGATCAGCTTCCTATCAATATTGGTATTACTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GCAAAGGCAATAGCTCTAGCAAAAACAACTTGTAGAACAAGTAGAAGCGGGCGCGATTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ecahagerhargarnerceceagesercrecesesercagercargerage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ĠŦĠĊAĠĠAĠĠŦĠĠĊĊĂŦĠĊŦĊĊĠĠĂŢĂŢĊŦĊĊŢĊĠŦĠĠŦĀĠAĠŢĠŢŢĊŢĠĊ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               carcarceaccaacccracaagaccarrcacacgcaaraccrccaargagcarcrceara
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              rectratestrickarcactristicaaaararkickaaagaristaserrikskaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1963 CGATGACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        rcrereardaarrceararcarcrrarrcacacreacecerraaceaercreecr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ;
                                                                                                                                                                                                                                                                                                                                                                                                                  10.3%; Score 296.4; DB 8; Length 796; larity 60.8%; Pred. No. 1.8e-62; Conservative 0; Mismatches 311; Indels 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       796
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GGCAGACTGCGGAT
```

œ

1976

1916

602

542

2036

```
/clone lib="Seed coat from mid-season walnut embryos collected Aug 1" /note="Organ: Seed coat; Vector: pTriplEx2; Site_1: SfilA; Site_2: SfilB; Walnut nut samples were harvested_from Tulare trees growing in the 'Stuke Block' in the Wolfskill experimental orchard located in Winters, California (USA).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CV195867 766 bp mRNA linear EST 15-SEP-2004 CGF1003441_A11 Seed coat from mid-season walnut embryos collected Aug 1 Juglans regia cDNA clone WSC0002_IVF_A11 5', mRNA sequence. CV195867
                                                                                                                                                                                                                                  1797 CCCACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGC 1856
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2037 AAGAATAAAAAAGAATTTGGTAAGCTTCCTGAAGAT---GGCAAAGATAACGATAATTTC 2093
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryotta; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicotyledons; rosids; eurosids I; Fagales; Juglandaceae; Juglans.

1 (bases I to 766)
Muir,R., Baek,J., Leslie,A., Cook,D. and Dandekar,A.
Analysis of genes expressed in walnut seed coat tissue
363 ATCGCTGCTTTCAAGAACCGCACAATTCATACTTATCACACAGAGGGTGCAGGAGGGGGGG 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               723 AAAATAAGGTGCAGAGGGGTTGGTTGCCGGAGGATGAGGGCCACAGGGGCTGATAATGCG 782
                                                                                                                                                                                                                                                                                                                                                                          CACCACCTAGACAAACGCATCCGCGAGGATTTTACAATTTTTCTCAAAGCCGTATCCGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1917 GGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAAGCTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1977 GATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGAT
                                                                                                                                                                   423 CATGCTCCGGATATCATCTCCGTGGTAGAGCATCAAAATGTTCTGCCATCATCGACCAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                         carcacrigrecaagaararcecagagargragecrireecgagagagcgrarregreer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      603 GAAACCATTGCTGCTGAGGATGTATTACACGACAAAGGCGCTATCAGCATGATGAGCTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           663 GACTCGCAGGCTATGGGCCGTTGCGGAGACGTCGTTTTAAGAACATGGAATACTGCGCAT
                                                                                                                                                                                                                                                                                                        483 CCTACAAGACCATTCACACGCAATACTCTCGATGAGCATCTCGATATGCTTATGGTCTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2094 CGCATTAAGCGCTACATCTCCAAATACACTATCAACCCCGCTTTGACCCACGGCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /db_xref="taxon:51240"
/clone="WSC0002_IVF_A11"
/sex="Hermaphrodite"
/lab_host="Mid season fruit collected Aug 1"
/lab_host="Xilo-Gold"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Contract: Abhaya Dandekar, PhD
CAES Genome Facility
UC Davis, Department of Pomology
One Shields Ave, Davis, CA 95616, USA
Tel: 530 752 7784
Fax: 530 752 8502
Email: andandekar@ucdavis.edu
Seq primer: WSCF-TCCGAGGACGAGC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           organism="Juglans regia"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Juglans regia (English walnut)
Juglans regia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /mol_type="mRNA"
/cultivar="Tulare"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CV195867.1 GI:52124704
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EST
                                                                                                                                                                                                                                                                                                                                                                          1857
                                                                                                                                                                                                                                                                                                                                                                                                                                            543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CV195867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                 8
                                                                                                                                                         Б
                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /clone=FVMAL96"
/tissue type="mycelia"
/clone_Tib="pvM"
/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1317 CCACAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACA 1376
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1377 GGTCCTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCAAATGGAACTTGCACCGC 1436
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1437 ATGTTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTTGGGCAAAGGCAATAGC 1496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1497 TCTAGCAAAAAACTTGTAGAACAAGTAGAAGCGGGCGCGATTGGTTTTAAATTGCAT 1556
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAAGACTGGGGCACAACACCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATAC 1616
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GATGTGCAAGTTTGTATCCACACAGATACAGTCAATGAGGCAGGTTATGTAGATGACACC 1676
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1677 CTAAATGCAATGAACGGCGCGCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGGA 1736
                                                                                                                                                                                                                           I (Dases I to 849)
Brown, D.W., Cheung, F., Proctor, R.H., Butchko, A.E., Zheng, L., Lee, Y., Utterback, T., Smith, S., Feldblyum, T., Glenn, A.E., Plattner, R.D., Kendra, D.F., Town, C.D. and Whitelaw, C.A.
Analysis of 87,000 expressed sequence tags reveals alternatively spliced introns in multiple genes of the fumonisin gene cluster
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         63 GGCCCAAGTGCTGGAACGAACTACTTGTACGCCTGGTGCTCATTACATGCGTCAA 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        123 ATGTTGCAGGCGTGCGATCAGCTTCCTATCATATTGGTATTACTGGCAAAGGTAATGAT 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             243 GAGGACTGGGGTTGCACTCCTGCTGTATTGACGCTTGTCTCAGTGTCTGTGATGAATTC 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     303 GATAITCAATGTCTTAITCACACTGACACGCTTAACGAGTCTGGCTTTGTCGAATCTACG 362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            183 AGTTCTCCTGAGGGTCTGCGCGATCAGGTCAATGCTGGTGCTTGTGGCCTCAAGCTTCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTICAGICAAGTACICIGAAGITICIATICIATICIAACIACIATGITIGIGIGITATACI
                                                                                                                                                                Eukaryota, Fungi, Ascomycota, Pezizomycotina, Sordariomycetes, Hypocreomycetidae, Hypocreales, Nectriaceae, Gibberella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .,
,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10.1%; Score 292; DB 8; Length 849; 60.2%; Pred. No. 2.3e-61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 vector (cDNA Synthesis Kit, Stratagene)."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Mismatches 330; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61604, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /organism="Gibberella moniliformis"
/mol_type="mRNA"
/strain="m1125"
/db_xref="taxon:117187"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                USDA
1815 N. University St, Peoria, IL 61604, U
Tel: 309 681 620
Fax: 309 681 6689
Email: browndw@ncaur.usda.gov
TIGR sequence name: FVMAJ6TH
Seq primer: AAT TAA CCC TCA CTA AAG GG.
                                                                                                                                    Gibberella moniliformis
                                  GI:70710433
                                                                                                                                                                                                                                                                                                                                                                                                                                     Unpublished (2005)
Contact: Brown, D.W.
USDA/ARS/NCAUR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     503; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                  DR635599.1
                                                                                                 Gibberella
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Best Local
Matches 5(
                                                                                                                                    ORGANISM
                                                                                                                                                                                                                                  REFERENCE
AUTHORS
                           VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                         JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURES
                                                                                                                                                                                                                                                                                                                                                                       TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
```

```
Samples were harvested on August 1, 2001 between 8 and 10 am. Samples were then dissected the same day. Seed coat (pellicle) tissue was separated from embryos and frozen immediately in liquid nitrogen and stored at -80C. A gram of sample was removed and ground to a fine powder in liquid nitrogen. Total RNA was extracted using the hot borate procedure. Poly A+ RNA was obtained using the Poly(A) Purist kit (Ambion). The cDNA Library was constructed using the SMART cDNA library kit (Clontech). Frimary library was en masse evicted and plasmid DNA containing the cDNA library was isolated from the resultant bacterial population. Plasmid DNA was then transformed into ultra competent E coli cells (Kil0 Gold; Stratagene). Transformats were plated out on Q-trays (2000 Ctu/tray), picked using a Qbot and archived in 384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GGCGGCACACGCTCTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCAAATGGAAC 1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GATGAATACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTA 1667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GATGACACCCTAAATGCAATGAACGGCCCCCCATCCATGCCTACCACATTGAGGGAGCG 1727
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGTGGAGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTACCCTCC 1787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TCCACCACCACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTC 1847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATG 1967
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACTGCGGATAAGAATAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGAT 2087
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 ATGAAGTTAATGCTGCAATCAACTGATGAGATGCCTCTAAATTTTGGTTTTACGGGAAAA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGTGGTGGTCATGCTCCAGATATCATTAAAGTATGTGGTGAAAAAAAGATGTCCTGCCATCA 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            reraccaaceceacacecerriraerricaacacraracarcaccarcircacarecre 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATAAGGGCTGAAACAATTGCTGCAGAGGATATTTTGCATGATATGGGGGCCAATTAGCATC 600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATTGCTTCCGATGCACAAGCTATGGGTCGCATTGGAGAGGTGATTAGCAGAACTTGGCAA 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            661 ACTGCCCACAAGATGAAGTTACAAAGAGGTCGATTGACCCTAGTGGACCAGACAATGAC 720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1428 TTGCACCGCATGTTGCGCGCAGAGAGAGTATTCTATGAATGTGGGCTTTTTGGGCAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGGAACAGTGCAAAACCTGATGAACTACATGAAATAATTAGAGCCGGGGCAATGGGACTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  <u> egogopacos de concario de accercicio de acente de acen</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAAAGCCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATGGTCTGCCATCACCTCGATAAAGATATTCCAGAAGACGTTGCTTTTGCTGAATCAAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 279.6; DB 7; Length 766; Pred. No. 2.8e-58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Mismatches 304; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         well dishes."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local Similarity 60.3%;
Matches 462; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1728
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1908
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2028
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1968
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2088
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
```

AAICTICGIAICAAGCGIIACAIIGCIAAAIACACAAIAAAICCIG 766

```
Eukaryota; Pungi; Ascomycota; Pezizomycotina; Eurotiomycetes; Onygenales; mitosporic Onygenales; Coccidioides.

1 (bases 1 to 986)

25 Gardner, M.J. and Cole, G.T.

Analysis of gene expression in Coccidioides posadasii mycelia and spherules via expressed sequence tags

10 Inpublished (2003)

11 Other ESTS: EST703969

12 Contact: Gardner MJ

13 Fal: 301 838 3519

14 Fax: 301 838 3519

15 Fax: 301 838 0208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCA 1900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   901 AAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGTGAT 1960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2021 TTGGCAGACTGCGGATAAGAATAAAAAGAATTTGGTAAGCTTCCTGAAGAT---GGCAA 2077
                              CF826586
EST701968 Coccidioides posadasii saprobic phase cDNA library, 2 to 4 kb Coccidioides posadasii cDNA clone CIDB361 3' end, mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        t I; Site 2: Eco RV;
cDNA library, size
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /mol_type="mRNA"
/strain="C735"
/db_xref="taxon:199306"
/clone="C10B361"
/dev stage="saprobic phase (mycelia)"
/lab_host="E. coli DH10B, T1 phage resistant"
/clone_lib="Coccidioides posadasii saprobic phase CDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1781 ACCCTCCTCCACCACCCCCACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         686 ATGGAACACTGCACATAAGAATAAAATGGAACGAGGGGGCGACTCAAGGAAGATGAAGGGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CGCGATGACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             926 GCCCAGCAGTACGAATCCCACTCGTCCGTATACGGTAAATACTTTAGATGAACATCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          caregraarecreccarcarrierccaaagararrecreaagacerecrirrecea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAGCCGGATCCGACACAATTGCTGCAGAAGACGTTCTTCATGACACGGGAGCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1721 GGGAGGGGGAGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="Vector: pExpress 1; Site_1: Not
Cocidioides posadasii saprobic_phase c
fractionated cDNA 2 to 4 kb"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /organism≈"Coccidioides posadasii"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match 9.5%; Score 274.2; DB 6; Best Local Similarity 59.1%; Pred. No. 6.6e-57; Matches 512; Conservative 0; Mismatches 343;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Email: gardner@tigr.org.
Location/Qualifiers
                                                                                                                                    GI:45932643
                                                                                                                                                                               Coccidioides posadasii
                                                                                                                                                                                                  Coccidioides posadasii
                                                                                                                                        CF826586.1
                                                                                                 sequence.
                                                                                                                       CF826586
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            908
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           746
                  CF826586/c
LOCUS
                                                       DEFINITION
                                                                                                                                                                                                  ORGANISM
                                                                                                                   ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                            REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                          JOURNAL
RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
```

```
COO27797 990 bp mRNA linear EST 10-JUN-2004 ESTB06181 Coccidioides posadasii spherule CDNA library, 0.5 to 5.3 kb Coccidioides posadasii cDNA clone CIFAM57 3' end, mRNA sequence. COO27797
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2066 --TGAAGATGGCAAAGATAACGATAATTTCCGCATTAAGGCGCTACATCTCCAAATACACT 2123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1708 CCTACCACATTGAGGGAGGGGGTGGAGACACTCACCTGATGTTATCACCATGGCAGGCG 1767
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1828 CAGAACACTTAGACATGCTCATGACATGCCACCTAGACAAACGCATCCGCGAGGATT 1887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1888 TACAATTITCICAAAGCCGTAICCGCCCCGGCTCTAICGCGGCTGAAGAIGTGCTCCAIG 1947
                                                                                                                                                                                                                                                                                                                                                                                                                                                               .588 ATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACAG 1647
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        176 GTCATCATCCGGACCTGGCAGACCGCCGACAAGATGAAGAAGCAGCGCGGATCGCTGCCG 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Coccidioides posadasii
Coccidioides posadasii
Coccidioides posadasii
Eukaryota; Fungi; Ascomycota; Pezizomycotina; Eurotiomycetes;
Onygenales; mitosporic Onygenales; Coccidioides.
1 (bases 1 to 990)
Gardner, M.J. and Cole, G.T.
Analysis of gene expression in Coccidioides posadasii mycelia and spherules via expressed sequence tags
Unpublished (2003)
Other_ESTS: EST806682
Contact: Gardner MJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2124 ATCAACCCGGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGG 2179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1468 ATGTGGGCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAAAACAACTTGTAGAACAAGTAG
                                                                                                                                                                                                                                                                                                                                                                                     536 TGACGAATCCGGGCCTTCGTCGAGGATACGATCAAGGCGTTCAAGGGCCGCACCATCCACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       476 cérrecadores de desentros de contra de con
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1769 AGCTCAATATTCTACCCTCCTCCACCACCCCCACTATTCCCTATACCATTAATACGGTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          416 TGAAGAACGTGCCGTCATCGACCCGACCGCGCCCCTTCACCCGCAACACCATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         296 TTGCGTTCGCCGAAAGCCGTATCCGCAAGGAGACCATCGCGGCCGAGGACATCCTGCACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                236 Arcredececereredardarereceredanacreceadecearedececedeceada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2007 GIGATICCICGAACTIGGCAGACTGCGGATAAGAATAAAAAAGAATTIGGTAAGCTICC-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               116 CAGGACAAGGGCAAGGACAACGACAATTTCCGCGTCAAGGGCGCTACATCGCCAAATACACG
                                                                                                                                                                                                                                            715 Arcredecarrrededeaadedeaacecercececececececececeardarea
                                                                                                                                                                                                                                                                                                                      1528 AAGCGGGCGCGATTGGTTTTAAATTGCATGAAGACTGGGGCACAACACACAAGTGCGATCG
                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        56 Arcaacnocecearcececacecereterceasecrearcecricecreseses
                                                                                                   ..
                                    Length
                         9.5%; Score 273; DB 9; Luilarity 64.0%; Pred. No. 1.2e-56; Conservative 0; Mismatches 253;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C0027797.1 GI:48558214
                                                                  Similarity
                             Query Match
Best Local Simil
Matches 458; (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1648
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C0027797/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠ
                                                                                                                                                                                                                                     요
                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                784 bp DNA linear GSS 24-APR-2001
BJ BA0003020f B. japonicum BAC library Bradyrhizobium japonicum
Genomic, genomic survey sequence.
                                                                                                                                                                                                                                                                                                                                                        2317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2377
                                                                                                                                                                                                               2257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CAAAGTCGCCTATGAAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTCTACC 2437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2438 GGTCAAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCAACGACAAAACGGCAAA 2497
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2498 AATCACCGTCGAQACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAA 2557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 (bases 1 to 784)
Tomkins, J.P., Wood, T.C., Stacey, M.G., Loh, J.T., Judd, A.,
Goicoechea, J.L., Stacey, G., Sadowsky, M.J. and Wing, R.A.
A marker-dense, sequence-ready map of the Bradyrhizobium japonicum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          336
567
                                                                                                                                                                                                                                                                                 447
                                                                                                                                                                                                                                                                                                                                                                                                        446 TGTCTCAGCGCAGATGGTGATCCCAATGGCTCTATCCCCACAATCGAGCCTATTATTAT 387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         156
GGATTCTGATAATTTTAGGGTTAAACGGTATATCAGCAAGTACACCATCAACCTGCCAT
                                                                                                                                                                                                                                                                                                                                                        2258 GGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCCACTCCCCACCGGTTTATTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2318 CCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      275 AGTGAAGAATTGTCGGAATATAAGCAAGAGAGATATGAAATTTAATGATATTATGCCCCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Aargagagregarecegaagerarerreregagecreacegegaagagrecacegeaa
                                                                                                                                                                                                           2198 GGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGT
                                                                                                                                                                                                                                                                              506 rerigiada arrigecea errigeda erra a ecesa erriga a errega arriga a errega arrige
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       386 GAGGCCTATGT-----ACGCTAGTCTTAACCCTAAAGCCTCAATCATGTTCGTATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   335 CCAAGCATCCATCAAGCTTGGTATCATCGACAGTTACCACCTGAAGAAGAGCGGATCGAGCC
                                                                  GACCCACGCCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAAGATCGCCGACTTGGT
                                                                                                                                     566 TGCACAGGGGATGGCCCACACTATTGGGAGCGTGGAAGTTGGCAAGACGCGCTGATTTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bradyrhizobium japonicum
Bradyrhizobium japonicum
Bacteria, Proteobacteria, Alphaproteobacteria, Rhizobiales,
Bradyrhizobiaceae, Bradyrhizobium.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /db xref="taxon:375"
/lab host="Bt. col."
/clone lib="B. dopincum BAC library"
/note="Vector: pindigo536; Site_1: HindIII"

    784
/organism="Bradyrhizobium japonicum"

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Clemson University Genomics Institute
Clemson University
100 Jordan Hall, Clemson, SC 29634, USA
Tel: 864 656 7288
Fax: 864 656 4293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Genome Res. 11 (8), 1434-1440 (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2558 ACCCACCTCGCAAGTGCCTCTAGCCCA 2584
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCCAGTGTCAGAGTTGCCTTTAACACA 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /mol_type="genomic DNA"
/strain="USDA110"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         quality sequence stop: 719.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Email: rwing@clemson.edu
Class: BAC ends
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AZ935182.1 GI:13777494
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Contact: Wing RA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  11483585
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               genome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  155
                                                                      2138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AZ935182/c
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
```

RESULT 12

요

g ò 셤 ò

g ò g ò g ò

ò

ద ò g

ઠે

2006

177

237

2065

57

REFERENCE AUTHORS JOURNAL

TITLE

FEATURES

ORIGIN

Н

1827

357

297

417

```
tissue_type="Cell cultures"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         mol_type="mRNA"
|db_xref="taxon:3750"
|clone="ABLC001286"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Email: est@hortresearch.co.nz.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
                                                                                                                                                                                                                                                                                                       CN907928.1 GI:48380429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      subculture"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local Similarity
nes 419; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1726
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         183
                                                                                                                               2532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                                                                                      ORGANISM
                                                                                                                                                                                                                                                         DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                            RESULT 14
CN907928
                                                                                                                                                                                                                                                                                                       VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                        ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                   AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ORIGIN
                           셤
                                                                 ઠ
                                                                                      용
                                                                                                                             8
                                                                                                                                                       용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2171
                                                                                                                                                                                                                                                                                                                                                                                                      GCGCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTG-ATGTTATC 1754
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCACCCCCCATATTCCCTATACC 1814
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCACCACCTAGACAAACGC 1874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATCCGCGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAA 1934
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GAAGAGGGCAAGATCGCCGACTTGGTGTGTGGAATCCTGCCTTTTTTTGGCGTAAAACCC 2231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTTGACACCAGCATCACTTTTGTTTTCCAAAGTCGCCTATGAAAATGGCGTGAAAAAG 2411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAATTT 2054
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GTGCCCACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAA 2351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    511
                                                                                                                                                                                                                                                                                                                                                                                                                                 GAGTGATTCATACGTACCACACTGAGGGTGCTGGAGGAGGCCACGCTCCAGAATATCATA 931
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 930 TCCGTCGTCGAGAAGCCAAACGTCCTGCCCAGCAGTACGAATCCCACTCGTCCGTATACG 871
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               870 Graantactrinacardaacarcrocacardarcarccroccarcarrigrocaaagar 811
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GAAGTTGGCAAGACCGCTGATTTGGTTCTGTGGAAATTTGCCAACTTTGGGACTAAACCG 451
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ------ATCATGTTCGTATCCCAAGCATCCATCAAGCTTGGTATCATCGACAGT 296
                                                                                                                                                                                      /dev_stage="spherules"
/lab_host="E. coli DH10B, Tl phage resistant"
/clone_lib="Coccidioides posadasii spherule cDNA library,
0.5 to 5.3 kb"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CCTCTCGGAGAGTTGTTCGGACATGGAACACTGCACATAAGAATAAAATGGAACGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GGTAAGCTTCCTGAAGAT --- GGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2112 TCCAAATACACTATCAACCCCGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             570 AGCAAGTACACCATCAACCCTGCCATTGCACAGGGGATGGCCCACACTATTGGGAGCGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  desceacheaagaagaagaagaagaarrengahrengahrinnagarinaaacagaanah
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             450 AGTATGGTCTTGAAGTCTGGAATGGCTGTCTCAGCGCAGATGGGTGATCCCAATGGCTCT
                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                            /note="Vector: pExpress 1; Site 1: Not I; Site 2: Coccidioides posadasii spherule cDNA library, 0.5 kb "
                                                                                                                                                                                                                                                                                                                                                                       29;
                                                                                                                                                                                                                                                                                                                                    9.1%; Score 262.6; DB 7; Length 990;
58.8%; Pred. No. 5.2e-54;
ive 0; Mismatches 339; Indels 29
                     20850, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            390 ATCCCCACAATCGAGCCTATTATTATGAGGCCTATGTACGCTCCTCA
                                                                                                             /organism="Coccidioides posadasii"
/mol type="mRNA"
/strain="C735"
The Institute for Genomic Research 9712 Medical Center Drive, Rockville, MD: 191: 301 838 3519
Fax: 301 838 0208
Email: gardner@tigr.org.
                                                                                                                                                              db_xref="taxon:199306"
clone="CIFAM57"
                                                                                                                                                                                                                                                                                                                                                                     525; Conservative
                                                                                                                                                                                                                                                                                                                                                      Best Local Similarity
Matches 525; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                      1696
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1755
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1815
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1875
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        069
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2055
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      630
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          750
                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                   source
                                                                                 FEATURES
                                                                                                                                                                                                                                                                                                         ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                dd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                      ઠ
```

```
1725
                                                                                                                                                                                                                                                                                                                                                                                                                                                    CN907928
030109ABLC001286HT (ABLC) Braeburn cell culture three days after
subculture Malus x domestica cDNA clone ABLC001286, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 (Dases 1 to 684)
Beuning, L., Bowen, J., Crowhurst, R., Gleave, A., Janssen, B., McArtrey, S., Newcomb, R., Ross, G., Snowden, K., Walton, E. and Yauk, Y. Unpublished (2004)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        242
                                                                                                                                      235 argadartradreararrandececadadreadareadreganeedegadeerargregegg 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Malus x domestica
Malus x domestica
Eukaryota, Viridiplantae; Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, eudicotyledons, core eudicotyledons,
rosids, eurosids I; Rosales, Rosaceae, Maloideae, Malus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /dev stage="Exponential phase of growth (three days after
subculture)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          clone_lib="(ABLC) Braeburn cell culture three days after
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ģ
295 TACCACCTGAAGAAGCGGATCCGAGTGAAGAATTGTCGGAATATAAGCAAGAGATAT
                                                                      2472 TICAAGTICAACGACAAAAACGGCAAAAATCACCGICGATCCGAAAACCTICGAGGTCTIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              123 TAGAGCATACAATTGCTGCATTTAAAGGAAGAACTATCCATACTTACCACAGTGAAGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTACCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3 realacriccardadedericceaececercerecriccalecarricarricarridecretric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1606 CAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTTATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        caderideseseccarecrecadararecaaserereceserereaaaaarerecear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="Vector: pBluescript SK(-); Library sequenced Genesis Research & Development"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Contact: Gleave, A.
Sequencing Facility
The Horticulture and Food Research Institute of New Zealand
120 Mt Albert Rd, Mt Albert, Auckland, New Zealand
Fel: 00 64 09 815 4200
Fax: 00 64 09 815 4201
                                                                                                                                                                                                                                                                                 GCTGACGGGGAAGAGTGCACCGCTGAGCCAGTGTCAGAGTTGCCTTTAACACA 123
                                                                                                                                                                                                             GTAGATGCCAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9.1%; Score 261.2; DB 7; Length 684; llarity 61.4%; Pred. No. 1.1e-53; Conservative 0; Mismatches 263; Indels 0;

    . 684
    /organism="Malus x domestica"
```

엄

g

셤 ò g ò g ઠે

ö

g

ò 셤 ò 임

ò

```
Query Match
Best Local Similarity 55.4%;
Matches 504; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2594 TTTCTTCTA 2602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CGTTTACTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2054
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .8∙
                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                            셤
                                                                                                                                                                        à
                                                                                                                                                                                                            d
                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                    원
                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
  1845
                                                                                                                                                                                                                                                                                                                                                                                        2086 ATAATTICCGCATTAAGCGCTACATCTCCAAATACACTATCAACCCCGCTTTGACCCACG 2145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CF714848 921 bp mRNA linear EST 16-AUG-2004 CCAF343TO C.neoformans strain JEC21 Cryptococcus neoformans var. neoformans clone CCAF343, mRNA sequence.
                                                                            TCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAAAGCC 1905
                                                                                                                                                                                                                                                                                                            2026 AGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACG 2085
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /clone="CCAF343"
/clone lib="C.neoformans strain JEC21"
/clone lib="C.neoformans strain JEC21"
/clone lib="C.neoformans strain JEC21"
/clone lib="C.neoformans strain JEC21"
/clone lib="Vector: pCNVSport6; Site l. Not! EcoRV; The full
length, normalized library was prepared from a variety of
conditions using RNA provided by Joseph Heitman and
Jennifer Lodge"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Tremellaceae;
                                                                                                                                                                                                                                                                      482
                                                                                                                                                                                                                                                                                                                                            483 AAACAGCTGACAAGATGAAATCACAAAGAGGTCGATAGAACCTAGTGGATCCGACAATG 542
                                                                                                                                                                                                                                                                                                                                                                                                              543 ACAACTICCGGATCAAACGATACATCGCAAAGTACATTATAAATTCCAGCAATAGTTAATG 602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        662
                                                                                                              303 igaigerrieccarcaccirgacaacairccagaagaigiagecririecigaarcaa 362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Cryptococcus neoformans var. neoformans (Filobasidiella neoformans var. neoformans)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Loftus, B.
End sequencing of clones from a Full length enriched, normalized
                                                                                                                                                                                                                                                                    423 İTGTATCTİCTGATİCACAGGCTATGGGTCGCATTGGAGAGGTGATAATCAGAACTTGGC
CCTCCACCACCCCCACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGC
                                                                                                                                                      GTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGA
                                                                                                                                                                                            363 GAATAAGGGCTGAAACAATTGCTGCAGAAGATATTTTGCACGATATGGGGGCCCATTAGCA
                                                                                                                                                                                                                                1966 TGACAAGCTCGGATTCGCAAGCAATGGGGCCGTGCAGGCGAAGTGATTCCTCGAACTTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2146 GCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGATCGCCGACTTGGTGGTGTTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GATTTTCTCAGTAGTTGTTGAGGTGGGGAAGCTGGCTGATCTTGTTCTATGGA
                                  CATCAACGAATCCCACACGGCCTTTCACCTCAAATACTATAGATGAGCATCTTGATATGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /organism="Cryptococcus neoformans var. neoformans"
|mol_type="mRNA"
|strain="JEC21"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Unpublished (2003)
Other_ESTS: CARTAINS
OTHER ESTS: CARTAINS
The Institute for Genomic Research (TIGR; www.tigr.org)
9712 Medical Center Drive, Rockville, MD 20850, USA
Fax: 301-838-0208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Cryptococcus neoformans var. neoformans
Eukaryota, Fungi, Basidiomycota, Hymenomycetes,
Heterobasidiomycetes, Tremellomycetidae, Tremellales,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       db_xref="taxon:40410"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2206 ATCCTGCCTTTTTGGCGTAAA 2227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AGCCATCGTTCTTTGGCGCAAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Email: bjloftus@tigr.org
Seg primer: TF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CF714848.1 GI:41569007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (bases 1 to 921)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Filobasidiella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CF714848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EST.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        603
                                                                            1846
1786
                                                                                                                                                      1906
                                      243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 15
CF714848/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMMENT
```

```
2473
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2413
                                                                                                                     1753
                                                                                                                                                                                                                                           1813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2533 2474 CAAGTTCAACGACAAAAAGGGCAAAAATCACCGTCGAAAAACCTTCGAAGGTCTTTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2534 AGATGGCAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACAC 2593
                                                             ö
                                                                                                                                                                                                                                                                                                                                                                 814 CATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCACCACCTAGACAAACG 1873
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1994 GCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAGAATT 2053
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              682
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            321 CCCCACTGTGCAGCCCGTCATTGGCAGGCCCATGTGGGGCTCTCAGCCTGAGGCCGCTGC 262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     201 CAACATCAAGAAGAGGCGGAGGCTGTCAAGAACTGTCGTGCAATTGGAAAGAAGATAT 142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                22
                                                                                                                                                                                                                                                                                                                                                                                                            801 TGTTAACACTCTTGATGAGCATCTTGACATGCTTATGGTCTGTCACCACCTCGATAAGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         régrarcédreaagrearcacrégracarégéeraceacaracaagracea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 81 réacedecercirrideaedereceaecagacaaacreceaegaecaagagarerr
                                                                                                                                                                                                                                                                                2114 CAAATACACTATCAACCCCGCTTTGACCCACGCGTGAGCGAGTATATCGGCTCTGTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              501 CAAGTACACTATTAACCCCCCCATTACCCACGGTATGTCGCACCTCATCGGTCAAGTTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2174 AGAGGCCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    441 CGTGGGCTGTCTGGCAGATCTGGTCTTCTGGACGGCAGAGTCCTTTGGTGCTAGACCGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2294 GCCCACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          141 GAAGTGGAATGACAGTATGCCGAAGATGACTGTCGGATCCGGAGACCTACGACGTTCACGC
                                                                                                                        1694 GCGCGCCATCCATGCCTACCACATTGAGGAGCGGGTGGAGGACACTCACCTGATGTTAT
                                                                                                                                                                                1754 CACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCACCCCCCACTATTCCCTATAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1874 CATCCGCGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              741 TATCCCGGAGGACATTGCCTTTTGCCGACTCTCGTATCCGTTCTGAAACCGTTGCAGCCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             681 AGACGITITACAGGACACAGGCGCGATITCCATGATCTCCATCACTGACTGAGCTATGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         561 regrecrerreaggecgargaacecacgagagacaacaaragggrgaacggrargree
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2234 AATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  261 ACTCAATTCAATTGTTTGGGTCAGCCAGGCATCTCTTGACAAGGATCTCGTGAAGAGATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2414 GGGCTTAGAGCGCCAAGTTCTACCGGTCAAAACTGCCGTAACATCACAGCAAGAAGACTT
                                                                 Gaps
                                                                 ö
Score 261; DB 6; Length 92
Pred. No. 1.3e-53;
0; Mismatches 405; Indels
```

Search completed: November 29, 2005, 07:20:55 Job time : 10217 secs

ORIGIN

```
30.
 880
 Š
                                                                                                                                  November 28, 2005, 19:56:44; Search time 1565 Seconds (without alignments) 12277.514 Million cell updates/sec
                                                                                                                                                                                                            US-09-904-994B-1
2883
1 rggragattttccarcactt......aaaaaagtagaagccacagg 2883
                                                                                                                                                                                                                                                                                                                                                                                 9993994
                         GenCore version 5.1.6 (c) 1993 - 2005 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                             Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                             4996997 segs, 3332346308 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                  OM nucleic - nucleic search, using sw model
                                                                                                                                                                                                                                                                                       IDENTITY_NUC Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  genesequil90s:*
genesequil90s:*
genesequil00s:*
genesequil00s:*
genesequil00s:*
genesequil00s:*
genesequil00s::
genesequil00s::
genesequil00s::
genesequil00s::
genesequil00s::
genesequil00s::
genesequil00s::
genesequil00s::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   geneseqn2005s:*
                                                                                                                                                                                                                                                                                                                                                                                                                    Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     N_Geneseq_21:*
1: geneseqn198
                                          Copyright
                                                                                                                                                                                                                                                                                     Scoring table:
                                                                                                                                                                                                                               Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                               Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Database
                                                                                                                                    Run on:
```

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

					SUMMARIES	
Result No.	Score	* Query Match	% Query Match Length DB	DB	ID	Description
1	2880.6	99.9	2883	7	ADJ58237	Adj58237 Urease su
7	2228	77.3	2452	7	ADJ58249	Adj58249 UreaseXY
٣	2158.6	74.9	2405	7	ADJ58240	Adj58240 UreaseXY
4	2158.6	74.9	2407	7	ADJ58246	Adj58246 UreaseXY
ហ	1948	67.6	2183	7	ADJ58243	Adj58243 UreaseXY
9	1184.4	41.1	8407	12	ADQ37847	Adg37847 H. bizzoz
7	1075.2	37.3	2735	~	AAT44351	Aat44351 H. pylori
œ	1062.6	36.9	2619	~	AAQ90180	Aaq90180 Helicobac
Φ	1062.6	36.9	2619	~	AAT45680	Aat45680 H. felis
10	1061	36.8	2619	7	AAQ75319	Aag75319 Urease ur
11	1058.6	36.7	4824	'n	AEB55130	Aeb55130 Salmonell
12	1058.6	36.7	4824	Ŋ	AEB55112	Aeb55112 Salmonell
13	1053.6	36.5	2767	7	AAQ12485	Aag12485 DNA encod
14	940.8	32.6	1710	12	ADQ37850	Adq37850 H. bizzoz
15	902.4	31.3	1719	œ	ABA00816	Aba00816 H. felis
16	885.8	30.7	1815	7	AAX14230	Aax14230 H. pylori
17	884.8	30.7	1710	œ	ACA34557	Aca34557 Prokaryot
18	881.8	30.6	1707	13	ADU05358	Adu05358 DNA encod
19	881.8	30.6	1707	13	ADU05359	Adu05359 DNA encod
<u> </u>	881.8	30.6	1707	7	ADU05359	

Novel Helicobacter felis urease X and Y subunit polypeptides, useful in the diagnosis of Helicobacter felis infections and in the preparation of vaccines.

WPI; 2002-124384/17. P-PSDB; ADJ58238, ADJ58239.

XXXXXXXXX

Claim 1; SEQ ID NO 1; 76pp; English.

	20	880	0	1710	σ	AAL60579	σ
	21			1710	7	AAQ04329	
	55	876.8	0	1717	φ,	ABA00817	Abauusi/ A. pyiori
	2 6	977.6	v r	2341	η α	AAV62460 AC845080	Aca45080 Prokarvot
	# C	0. #C/	ח ש	2400	٥ ر	ACM 2000	Aav19002 Klebsiell
	56	693.4	4	4768	m	AAZ92097	
	27	9.069	4	2439	œ		Aca46520 Prokaryot
U	28	664.4	3.0	110000	0	AAT42063_05	Continuation (6 of
	53	658.6	2	1698	œ	ACA45232	Aca45232 Prokaryot
	30	653	N	1710	10	ADF01572	Adf01572 Bacterial
	31	634.8	3	3919	13	ADT05424	Adt05424 Haemophil
	32	634.8	2	85814	13	ADT05644	Haemoph
	33	630.6	-	8729	σ	ACD19244	Acd19244 E. coli 0
	34	630.6	Η.	86248		ADC00087	Adc00087 Enteronae
	32	630.6	\vdash	87563		ACD19044	Acd19044 E. co11 0
υ	36	627.6	-	2966		AAV74333	Aav74333 Staphyloc
	37	625.4	-	1719		ACA34156	Aca34156 Prokaryot
	38	617.8	н.	1878		ACH96250	AChybaso Klebsieli
	γ ·	27.79	٠,	1/01		ACASSSS	Acasses Floralfor
	, 4 O		٠,	7000		AAH54489	Ashtada C. Chider
	4, 4	و م		5254		AAH0440V AAAbaa13	Administra C. Cpicci
	4, 4	2 0	- 0	1704		ACA23/12	Aca23/12 Flowaryou
	7 5	າຄ	>	1710		ACA23304 ACA53933	Aca53973 Prokarvot
	4.5	591.4	20.5	1698		ACA20910	Aca20910 Prokaryot
						ALIGNMENTS	
ADC	RESULT 1 ADJ58237		9	Š	0		
3 \$	3	1670	7 7 7 7 7 7	, c	2		
A S	Ą	ADJ58237;					
X							
답?	90	06-MAY-2004	(first	st entry)	2		
E S	ur	Urease subunit		polypeptide		complex encoding sequence.	
X X		mmunogenic	fragment:		tiba	antibacterial; Vaccine; Helicobacter	octer felis; ds.
×		1	•				
SO	He	Helicobacter	feli				
ξE	Key	>	ă	Location/Qualifi	/ong	lifiers	
FI	8	ຜ	Ñ	06886	ın e		
H				/*tag= a /product=		"urease polypetide complex"	
FT	CDS	Š	œ	972603	Œ	:	
Ŧ			•	*tag=]	_		_
답\$			~	product:		"urease polypeptide complex"	_
{ E }	ВP	EP1176192-A2					
₹	30	-JAN-2002.					
X F	11	-JUL-2001;		2001EP-00202666	2666		
×							
PR	17	7-JUL-2000;		2000EP-00202	2565		
E E	₹	(ALKU) AKZO	NOBEL NV	L NV.			
X h	Š	Knetere .TC	י [טידינט				
1 }	ł		3				

The present invention relates to a novel Helicobacter felis urease X and

ind ons ons its	ċ	, 09	120	180	240	300	360	420	480	540	009	099	720	780	840	006
The present invention federables of a nover healtocoacter tells utests A and Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis. Helicobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an urease subunit polypeptide complex encoding sequence of the invention.	ָ נ נ	TTRCR TTRCR	TATTA TATTA	GCCTT	111CTT	PACCA	AAAAA 	ATGCC ATGCC	ACGAA	GTGAA GTGAA	GAGGT GAGGT	GCTAA GCTAA	71CTGG	CAACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGG 	CAGTAAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCATAA 	CATGA
s ured peptid elis i obacte enient and Y sents	2883;		actigitaatrctattattaattttttaataattacttattatcatatataata	TTACTTATATTAAAAAGTTAATAAAAGTAACGAAATTAGGACTATAATCCATTGCCTT 	TAAAATTTAACACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAAGTTCTT 	GTTATATTATGCGGGCGAAGTGGCTAGAAAGCGCAAAGCAGAGGGGTTAAAGCTCAACCA 	accgaagccattgcttacattagtgcccatattatggacgaagggggccgtggaaaaa 	aaccgttgcccagcttatggaagagggcatgcactttttgaaaaaagatgaagataatgcc 	CGGGGTGGGTAATATCCTTCCCGATCTAGGTGTAGAGCACCTTTCCTGATGGTACGAA 	CTIGTAACTGTGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGGGGGGAAGTGAA 	ATTTGGTTGCGATAAAGACATCGAGCTCAATGCAGCCAAAGAAGTAACCGAACTTGAGGT 	TACTAATGAAGGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAA 	CAAGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCT(GAACGC	acataaagcgcttgacaaggcgaaatctcacggatttatcaagtaaggagactcccatga
r reil e poly cter f Helic e conv ease X repre	; 6 Other Length	376667 	CATATA CATATA	TATAAT TATAAT	GAGCAA GAGCAA	GCCTTA	300000 	AAAGAT AAAGAT		AAAGCG AAAGCG	GTAACC GTAACC	CACTTC	CTAGAT CTAGAT	TTGATT TTGATT	GCGGAT GCGGAT	TAAGGA
Dacce 18. Thi 11coba Jainst 18 mor 1he ur Thence of the) U; 6 7; L	renerry 	CATTAT FATTAT	raggac raggac	CCCAAA	SCAGAG SCAGAG	BACGAA BACGAA	rtgaaa rtgaaa	SCCACC sccacc	CACTTC	aaagaa aaagaa	CATTIC	AAACGC AAACGC	STGCAG STGCAG	AACATC	ATCAAG
Agment agment agment Helston H	E⊣	GATCC	TTACT TTACT	GAAAT	TCACAC	GCAAAC GCAAAC	TTATGO TTATGO	ACTIT	TAGAAC TAGAAC	argage argage	cageca cageca	GTAGC GTAGC	ATGGC	GCAAA(STGAATA	GATTT/
nic fr again again ntibod grow s grow s prese	G; 6 2880. No.	CATATT	TAATAA TAATAA	AGTAAC AGTAAC	TGAAAC TGAAAC	GAAAGC GAAAGC	CCCATA	GCATGC GCATGC	TAGGTG TAGGTG	AACCAC	TCAATO	ATGTGC ATGTGC	AAGCCI AAGCCI	AAACCC AAACCC	9607770 	CTCAC
nunoge scines cect a lt to gene s. The	C; 666 Score	CAAGCA	ATTTT ATTTT	TAAAA TAAAA	AATAGG AATAGG	receta 	rtagtg rtagtg	AAGAGT AAGAGT	CCGATC	CATCG	rcgage 		GTGAAA GTGAAA	CAGGAC	IGAACG IGAACG	CGAAAT
nd imm of vac to det fficul of the ccines	642 98; .08;	CACTTC	TATTA TATTAA	AGTTA	GGAGT/ GGAGT/	CGAAG	TTACA: TTACA:	TATGG TATGG	GGTTC(GGTTC(11166CC	AGACA: AGACA:	TAAAT TAAAT	CGATC	16666 11111 16666	TGGCA' TGGCA'	CAAGG
ides a cture cests is di lucts of va	371 A; 99.9	TCCAR FTCCAR	RCTAT	TTAAAA TAAAA	ACACAA 	76CGGG	CATTGC	CCAGCT CCAGCT	FAATAT FAATAT	rgtgaa rgtgaa	CGATAA CGATAA	AGGGCC	AAAATT	ACGCAT 	AGTGAT AGTGAT	SCTTGA
ypept: Amntac Amtic t felis A proc	2883 BP; 87 imilarity	AGATT	GTTAA: GTTAA:	TTATA	ATTTA ATTTA	TATTA' TATTA'	GAAGC	GTTGC	101666 	GTAAC GTAAC	GGTTG GGTTG	PATGA PATGA	GCACT.	ACGCT.	PAAAA aaaaa	AAAGC
the maliagno acter cession polyp	2883 1 Simil	1 RGGR 1 RGGR	1 ACTI	1 TTAC 1 TTAC	1 TAAP 1					1 ACT1 1 ACT1				-		-
subuni ed in d in c licobe e expi the m	Sequence 28 ery Match st Local Sim		61	121	181	241	301	361	421	4 48	541	601	661	721	781	841
Y us the the tin tin su	Se ery et															

6 B 6 B 6 B 6

9a & 9a &

qq

Š

g

ò

qq

දු පු

4 6 6 6 6 6 6 6 6

```
immunogenic fragment; antibacterial; Vaccine; Helicobacter felis;
                  subunit encoding sequence
(first entry)
                                                                                                                                                                                                                       (ALKU ) AKZO
06-MAY-2004
                                                                                                                                                EP1176192-A2
                                                                                                                                                                  30-JAN-2002
                                                                                                                                                                                                                                        Kusters JG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               339
                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                       Key
                                                                                                           CDS
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                  2280
                                                                                                                                                                                                      2340
                                                                                                                                                                                                                       2340
                                                                                                                                                                                                                                         2400
                                                                                                                                                                                                                                                          2400
                                                                                                                                                                                                                                                                             2460
                                                                                                                                                                                                                                                                                               2460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2820
                                                     2100
                                                                       2100
                                                                                         2160
                                                                                                                                                                                    2280
                                                                                                                                                                                                                                                                                                                 2520
                                                                                                                                                                                                                                                                                                                                   2520
                                                                                                                                                                                                                                                                                                                                                     2580
                                                                                                                                                                                                                                                                                                                                                                       2580
                                                                                                                                                                                                                                                                                                                                                                                         2640
                                                                                                                                                                                                                                                                                                                                                                                                           2640
                                                                                                                                                                                                                                                                                                                                                                                                                              2700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2760
CTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGGATGACAAGCTCGGATT 1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TATGCCCCCTCATTITIAAAGGAGAATTATGCGTAGGTCTTTGGTATTGCTATGTGGGGGG 2820
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                             TCTTCATCAAACGCACCTGCAATCGGTCTTGCGTGTGCGATCGTGCGCTTTAAAACAAC
                          ATAAAAAGGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATTA
                                                                                         AGCGCTACATCTCCAAATACACTATCAACCCCGCTTTGACCCCACGGCGTGAGCGAGTATA
                                                                                                    AGCGCTACATCTCCCAAATACACTATCAACCCCGCTTTGACCCCACGGCGTGAGCGAGTATA
                                                                                                                            TCGCCTCTGTGGAAGAGGCCAAGATCGCCGACTTGGTGGTGGAATCCTGCCTTTTTTG
                                                                                                                                       TCGGCTCTGTGGAAGAGGCAAAGATCGCCGACTTGGTGTGTGGAATCCTGCCTTTTTTG
                                                                                                                                                                  GCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGATT
                                                                                                                                                                           GCGTAAAAACCCAAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGATT
                                                                                                                                                                                                      CTAACGCGTCTGTGCCCACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCACG
                                                                                                                                                                                                                CTAACGCGTCTGTGCCCCACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCACG
                                                                                                                                                                                                                                         GCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGCG
                                                                                                                                                                                                                                                     GCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGCG
                                                                                                                                                                                                                                                                             TGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTCTACCGGTCAAAAACTGCCGTAACATCA
                                                                                                                                                                                                                                                                                                                                                    TCGAGGFCTTTGTAGATGGCAAACTCTGCACCTCTAAACCCCACCTCGCAAGTGCCTCTAG
                                                                                                                                                                                                                                                                                                                                                               TCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTCTAG
                                                                                                                                                                                                                                                                                                                                                                                                   rcrrcarcaacccaccrecaarcegrcrrecererecearcererecererearcaac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTGTTTGGTGCTGGGCGCAAAGGGTATTGAAACCCATCGCCTCAAAAAAGTAGAAGCCAC
                                                                                                                                                                                                                                                                                        CCAAGAAAGACTTCAAGTTCAACGACAAAAACGGCAAAAATCACCGTCGGTCCGAAAAACCT
                                                                                                                                                                                                                                                                                                                                                                                        CCCAGCGCTACACTTTCTTCTAGGCACAATGCCCCCTTTGGGGGCCAGGTTATTTAGGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TATGCCCCCTCATTTTTAAAGGAGAATTATGCGTAGGTCTTTGGTATTGCTATGTGGGGGG
                  CGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAGA
                                                                                                                                                                                                                                                                                                                  CCAAGAAAGACTTCAAGTTCAACGACAAAACGGCAAAAATCACCGTCGATCCGAAAAACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGG-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGG
1921
                                   1981
                                                                       2041
                                                                                                           2101
                                                                                                                                                                                                                                         2341
                                                                                                                                                                                                                                                                                                                                                                                                         2581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2761
                  1981
                                                      2041
                                                                                         2101
                                                                                                                             2161
                                                                                                                                               2161
                                                                                                                                                                  2221
                                                                                                                                                                                    2221
                                                                                                                                                                                                      2281
                                                                                                                                                                                                                       2281
                                                                                                                                                                                                                                                           2341
                                                                                                                                                                                                                                                                             2401
                                                                                                                                                                                                                                                                                               2401
                                                                                                                                                                                                                                                                                                                 2461
                                                                                                                                                                                                                                                                                                                                  2461
                                                                                                                                                                                                                                                                                                                                                     2521
                                                                                                                                                                                                                                                                                                                                                                       2521
                                                                                                                                                                                                                                                                                                                                                                                         2581
                                                                                                                                                                                                                                                                                                                                                                                                                              2641
                                                                                                                                                                                                                                                                                                                                                                                                                                                2641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2761
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2821
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2821
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2881
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2881
                             8 & 8
                                                                                      8 & B &
                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                          QQ
                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                     ద
                                                                                                                                                                                                                                                                                                                                                                                        8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                            유
                 8
                                                                                                                                                               $ 8 $
                                                                                                                                                                                                                                       $ B $
                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠ
```

BP.

standard; DNA; 2452

ADJ58249 ADJ58249

RESULT 2
ADJ58249
ID ADJ5
XX
AC ADJ5
XX

```
The present invention relates to a novel Helicobacter felis urease X and Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis. Helicobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an ureaseXY subunit of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Novel Helicobacter felis urease X and Y subunit polypeptides, useful in the diagnosis of Helicobacter felis infections and in the preparation of vaccines.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CCAAAGAGCAAGAAAAGTTCTTGTTATATTATGCGGGCGAAGTGGCTAGAAAGGGGCAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TGAAAAAAGATGAAGTAATGCCCGGGGGGGAAATATGGTTCCCGATCTAGGTGTAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           159 AGGACTATAATCCCATTGCCTTTAAAATTTAACACAGGAGTAATAGGTGAAACTCACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 AGGACTATAATCCCATTGCCTTTAAAATTTTAACACAAGGAGTAATAGGTGAAACTCCACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CCAAAGAGCAAGAAAGTTCTTGTTATTATGCGGGCGAAGTGGCTAGAAAGCGCAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CAGAGGCCTTAAAGCTCAACCAACCCGAAGCCATTGCTTACATTAGTGCCCATATTATGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     <u> accadecicici recica a a a a a a contraceca a critarica a caretra recia contrata contrata a a contrata a contrata a contrata contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contrata a contra</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             rgaaaaaaacgaggrgargccccggggrgggaaararggrcccrgarrrgggcgrgaag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CCACCTTTCCTGATGGTACGAAACTTGTAACTGTGAATTGGCCCCATCGAACCAGATGAGC
₫₿.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 2452;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 2452 BP; 746 A; 568 C; 590 G; 548 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              77.3%; Score 2228; DB 7;
94.3%; Pred. No. 0;
iive 0; Mismatches 140;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein"
                                                                                                                                                                                                                                                                                                                                    protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Disclosure; SEQ ID NO 13; 76pp; English
                                                                                                                                                                         Location/Qualifiers
48. .728
/*tag= a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "urease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               11-JUL-2001; 2001EP-00202666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             17-JUL-2000; 2000EP-00202565
                                                                                                                                                                                                                                                                                        /*tag= a
/product= "
739. .2445
/*tag= b
/product= "
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      P-PSDB; ADJ58250, ADJ58251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity 94.3
Matches 2312, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Cattoli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2002-124384/17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NOBEL
                                                                                           Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
```

Tue

```
721 CACCTACGGACCCACCACAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CCGTGAGGGTATGGGTCAGAGCAATAGCCCCAGATGAAAAACACCCTTAGATTTTAGTGATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGAAGCGGGGGTTGGTTTTAAATTGCATGAAGACTGGGGGCACAACACCAAGTGCGAT
                                                                                                            CTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAGGGCCTAAATCCTTG
                                                                                                                                         AAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATTGGGGCAGGA
                                                                                                                                                                                                                                                                                                                                            CAAACCCGTAAAGTGCAGTTAATCCCTCTTGGCGGTAGTAAAAAAGTGATTGGCATGAAC
                                                                                                                                                                                                                                                                                                                                                                                                             GGGCTTGTGAATAATATTGCGGACGAACGCCATAAACACAAAAGCACTAGACAAGGCAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGTAGAACATGACTATACCACCTATGGCGAAGAACTTAAAATTTGGCGCGGGTAAAACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           781 AGTAGAACATGACTATACCACTTATGGCGAAGAGCTCAAATTTGGCGCGGGTAAAACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGGGATTCGCACACCCCACTTCCTCTCCCCAACAATTCCCTACCGCTCTAGCCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CATCACTCCGGGCAAATGGAACTTGCACCGCATGTTGCGCCGCAGCTGAAGAGTATTCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GAACCAGATGAGCACTTCAAAGCGGGGGGAAGTGAAATTTGGTTGCGATAAAGACATCGAG
                                                                                                                                                                              CATGIGGGTAGCCATTICCACTICITIGAAGCTAACAAGGCACTAAAATTCGATCGTGAA
                                                                                                                                                                                                                                                                                                            CAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAAGTGATTGGCATGAAC
                                                                                                                                                                                                                                                                                                                                                                             GGGCTTGTGAATAACATCGCGGATGAACGCCATAAACATAAAGCGCTTGACAAGGCGAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                             CCGTGAGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TAACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGGATTAAAAACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CAAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TATGGTCGTGGGGTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGGAATCGATTCACACCCCACTTCCTTCCCACACAATTCCCTACCGCTCTAGCCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TGGCGTTACAACCATGTTTGGAGGCGCCACAGGTCCTGTAGATGGCACGAATGCGACTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TACCTACGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1526
                                               909
                                                                              301
                                                                                                            999
                                                                                                                                            361
                                                                                                                                                                              626
                                                                                                                                                                                                             421
                                                                                                                                                                                                                                               989
                                                                                                                                                                                                                                                                               481
                                                                                                                                                                                                                                                                                                                746
                                                                                                                                                                                                                                                                                                                                              541
                                                                                                                                                                                                                                                                                                                                                                              806
                                                                                                                                                                                                                                                                                                                                                                                                               601
                                                                                                                                                                                                                                                                                                                                                                                                                                               998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               926
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1261
                                                                     셤
                                                                                                    8
                                                                                                                                      g
                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                          원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           유
                                            ઠે
                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     පු
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             The present invention relates to a novel Helicobacter felis urease X and Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis. Helicobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCCCATATTATGGACGAGGGGCGCGTGGCAAAAAACCGTTGCTGAACTTATGGAAGAA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTGTGAATTGGCCCATC 505
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Novel Helicobacter felis urease X and Y subunit polypeptides, useful in the diagnosis of Helicobacter felis infections and in the preparation of vaccines.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGAAAGCGCAAAGCAGAGGGCTTAAAGCTCAACCAACCCGAAGCCATTGCTTACATTAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGAAAGCGCAAAGCAGAGGGCTTAAAGCTCAATCAACCCGAAGCCATTGCCTACATTAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GCCCATATTATGGACGAGGCGCCCGTGGAAAAAAAACCGTTGCCCCAGCTTATGGAAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GTGAAACTCACACCCCAAAGAGCAAGAAAGTTCTTGTTATATTATGCGGGCGAAGTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               renariceaentringaaaaaaaaagangagegangeeeeggreneeggaanangereergan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATTATTATGCGGGCGAAGTGGCT
                                                                                                                               ds.
                                                                                                                                 felis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 2405;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              T; 0 U; 0 Other;
                                                                                                                               immunogenic fragment; antibacterial; Vaccine; Helicobacter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              154;
                                                                                                                                                                                                             1. .681
/*tag= a
/product= "urease protein"
692. .2398
/*tag= b
/product= "urease protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Match 74.9%; Score 2158.6; Local Similarity 93.6%; Pred. No. 0; es 2251; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 2405 BP; 715 A; 571 C; 588 G; 531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Disclosure; SEQ ID NO 4; 76pp; English.
                                                                                               UreaseXY subunit encoding sequence #1
                                                                                                                                                                                               Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 subunit of the invention.
 ВЪ
 DNA; 2405
                                                                                                                                                                                                                                                                                                                                                                                            2001EP-00202666
                                                                                                                                                                                                                                                                                                                                                                                                                                17-JUL-2000; 2000EP-00202565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                P-PSDB; ADJ58241, ADJ58242
                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Cattoli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2002-124384/17
                                                                                                                                                             felis.
standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                NOBEL
                                                                                                                                                               Helicobacter
                                                                                                                                                                                                                                                                                                                                                                                              11-JUL-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                (ALKU ) AKZO
                                                                                                                                                                                                                                                                                                                             EP1176192-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Kusters JG,
                                                                06-MAY-2004
                                                                                                                                                                                                                                                                                                                                                               30-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local S.
Matches 2251
ADJ58240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ureaseXY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               446
```

1165

1105

1045

780

840

925

720

9

745

805

625 420 685 480 1225

1080

6 B 6

음 상 음

\$ B \$

1465

g

8

g ó 임 8

∂

BP.

```
ADJ58246 standard; DNA; 2407
                        RESULT 4
ADJ58246
                                                                                                                                                                                                     Key
                                                                                                                                                                                                                                                       CDS
                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2485
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2400
                                                                                                                          1765
                                                                                                                                                                                                                                                                                                                                                                                 2065
                                                                                                                                                                                                                                                                                                                                                                                                                                   2125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2100
                                                                                      AGAAGCGGGCGGATTGGCTTTAAATTGCATGAAGACTGGGGCACAACACCCAAGTGCGAT 1380
                                                                                                                                        TGCCTACCACATTGAGGGAGGGGGGGGGGACACTCACCTGATGTTATCACCATGGCAGG
                                                                                                                                                                                                                                            CGCCGACTTGGTGGTGGAATCCTGCTTTTGGTGTAAAACCCAAAATCGTGATCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2101 GCCGGTTTATTACCGCGAAATGTTTGGCATCACGGCAAGGCGAAATTTGACACCAGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITIACAATITITCTCAAAGCCGTATCCGCCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCA
                                                                                                                                                                                                                                                                                              TCTCCAGTTTTCCCAAAGCCGTATCGCCCCGGCTCTATTGCCGCTGAAGATGTGCTCCA
                                                                                                                                                                                                                                                                                                                                                   AGGCGGTATGGTGTTCTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCACACACTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CCAAGTTCTACCGGTCAAAAACTGCCGTAACATCACCAAGAAAAAGACTTCAAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAAGGTGCTACCCGTGAAAAACTGCCGCAACATCACTAAGAAGACTTCAAATTCAACAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CTGCACCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTTACTTCTTAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTGCACCTCTAAACCCGCCTCTGAAGTGCCTCTAGCCCAACGCTACACTTTCTTCTAGGC
                                                                                                                                                                                                                              TGCAGAACACTTAGACATGCTCATGACATGCCACCACGTAGACAAACGCATCCGCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                 AGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCC
                                                                                                                                                                                                                                                                                                                                                                                                        rgaagarggrecagaraargacaacrrccgcarcaaacgcrararcrccaaaracaccar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1921 TAATCCCGCTTTGACCCATGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGAGGCCAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CGCCGACTTGGTGGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGGCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCACTCCCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CACTTTTGTTTTCCAAAGTCGCCTATGAAAATGGCGTGAAAAAAAGCTGGGCTTAGAGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CAAAACGGCAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CAAGACGGCGCATATCACTGTCGATCCTAAAACCTTCGAGGTCTTTGTAGATGGCAAACT
                                                                                                                          TGCCTACCACATTGAGGGAGCGGGTGGAGACACTCACCTGATGTTATCACCATGGCAGG
                                                                                                                                                                            CGAGCTCAATATTCTACCCTCCTCCACCACCCCCCACTATTCCCTATACCATTAATACGGT
                                                                                                                                                                                         CGAGCTCAATATTCTACCCTCCTCCACCACCCCCATATTCCCTATACCATTAATACGGT
                                                                                                                                                                                                                                                                                                                                TGAAGATGGCAAAGATAACGATAAATTTCCGCATTAAGCGCTACATCTCCAAATACACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CAACCCCGCTTTGACCCACGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCCAAGAT
                                                                         AGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATGAACGGGCGCGCCATCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACAAT 2610
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACAAT
                                                                                                                                                                                                                                                                                                                                                                               2006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1981
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2041
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2401
                                                                                                                                                                                                                                                                                                                                                        1741
                                                                                                                                                                                                                                                                                                                                                                                                                                                         1861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2306
                                                                                                                                                                                                                            1826
                                                                                                                                                                                                                                                                              1886
                                                                                                                                                                                                                                                                                                       1681
                                                                                                                                                                                                                                                                                                                                1946
                                                                                                                                                                                                                                                                                                                                                                                                        1801
                                                                                                                                                                                                                                                                                                                                                                                                                                 2066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2281
                                                1381
                                                                        1646
                                                                                                                        1706
                                                                                                                                                   1501
                                                                                                                                                                          1766
                                                                                                                                                                                                                                                     1621
                                                                                                                                                                                                   1561
```

Op

g

셤 ò

ò

음

ò

g

ò

g

ò

Я

8

g ò g ò 셤 ò 유 Š g ŝ g 8 g ò g

ò

```
The present invention relates to a novel Helicobacter felis urease X and Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis. Helicobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an ureaseXY subunit of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGCATGCACTITITGAAAAAAAGATGAAGTAATGCCCGGGGTGGGTAATATGGTTCCCGAT 445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Novel Helicobacter felis urease X and Y subunit polypeptides, useful in the diagnosis of Helicobacter felis infections and in the preparation of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCCCATATTATGGACGAGGCGCCGTGGCAAAAAGACCGTTGCGGAACTTATGGAAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62 AGAAAGGGGAAAGGGGAGGGCTTAAAGGTCCAACCCAAAGCCCATTGCCTACATTAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCCCATATTATGGACGAAGCGCCGTGGAAAAAAAAACCGTTGCCCAGCTTATGGAAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATTATGCGGGCGAAGTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATTATTGCGGGCGAAGTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AGAAAGCGCAAAGCAGAGGGCTTAAAGCTCAACCAACCGAAGCCATTGCTTACATTAGT
                                                                                                                                                 ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                 fragment; antibacterial; Vaccine; Helicobacter felis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 2407;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 2407 BP; 720 A; 574 C; 584 G; 528 T; 0 U; 1 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                155; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; Score 2158.6; I
; Pred. No. 0;
0; Mismatches 1
                                                                                                                                                                                                                                                                                                                                                                                                     protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Disclosure; SEQ ID NO 10; 76pp; English
                                                                                                UreaseXY subunit encoding sequence #3
                                                                                                                                                                                                                                              Location/Qualifiers
2. .682
/*tag= a /product= "urease pro 693. .2399
                                                                                                                                                                                                                                                                                                                                                                                                     "urease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               74.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        17-JUL-2000; 2000EP-00202565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       11-JUL-2001; 2001EP-00202666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 P-PSDB; ADJ58247, ADJ58248
                                                 entry)
                                                                                                                                                                                                                                                                                                                                                                                                     /product=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity 93.6'
Matches 2251; Conservative
                                                                                                                                                                                                                                                                                                                                                                              /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Cattoli G;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (ALKU ) AKZO NOBEL NV
                                              (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 2002-124384/17
                                                                                                                                                                                                  Helicobacter felis.
                                                                                                                                                 immunogenic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        30-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Kusters JG,
                                              06-MAY-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ~
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       566
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          386
ADJ58246;
```

ö

q

ò

```
1143 regererracaaccarerrregaegerescacaegercegeragarescacaedarescacaecae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TATGGTCGTGGGTGTGGGCACAGAAGCACTAGCAGGGGAAGGTATGATTATTACCGCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TGGCGTTACAACCATGTTTGGAGGCGGCACAGGTCCTGTAGATGGGCACGGATGCGACTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCCCATATTATGGACGAGCGCGCGTGGCAAAAAAACCGTTGCTGAACTTATGGAAGAA
                                                                                                                                                         AAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATTGGGGCAGGA
                                                                                                                                                                                                                                                                                                                                                                            CAAACCCGTAAAGTGCAGTTAATCCCTCTTGGCGGTAGTAAAAAAGTGATTGGCATGAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CACCTACGGACCCACCACACAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGTAGAACATGACTATACCACCTATGGCGAAGAACTTAAAATTTGGCGCGGGTAAAACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TATGGTCGTGGGTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GGGAATCGATTCACACACCCCACTTCCTTTCTCCACAACAATTCCCTACCGCTCTAGCCAA
                                                                                 CTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTGTGAATTGGCCCATC
                                                                                               TIGGGGTAGAAGCCACTITCCCCGAIGGCACCAACTCGIAACCGIGAATIGGCCCATI
                                                                                                                                                                                                                                                                                                                                                                                                                                           GGGCTTGTGAATATATTGCGGACGACGCCATAAACACACAAAAGCACTAGACAAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        rereacegarreaceaegaegaegaereceargaaaargaaaagaagaegaagaraaaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TACCTACGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CCGTGAGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                106 TAACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CAACGCGATGATTATCGACTACACCGGGATTTATAAAGCCGACATTGGTATTAAAAATGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CAAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCA
                                            GAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTTGGTTGCGATAAAGACATCGAG
                                                                                                                                                                                           CTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAGGGCCTAAATCCTTG
                                                                                                                                                                                                                     crcaacgreegraaggaagrracceaecrreaagrraccaacgaaggaccraaarccrre
                                                                                                                                                                                                                                                   CATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCACTAAAATTCGATCGTGAA
                                                                                                                                                                                                                                                                           cargregeraeccarrrccacrrcrrreaaaccaacaacarreaaarrcearcegeaa
                                                                                                                                                                                                                                                                                                                                                            CAAACCCGCAAAGTGCAGTTGATTCCTTGGTGGCAGTAAAAAAGTGATTGGCATGAAC
                                                                                                                                                                                                                                                                                                                                                                                                                   GGGCTTGTGAATAACATCGCGGGATGAACGCCATAAACATAAAGCGCCTTGACAAGGCGAAA
                           AAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATTGGGGCAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1023
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1083
                                                      183
                                                                                 446
                                                                                                            243
                                                                                                                                       206
                                                                                                                                                                                                                       363
                                                                                                                                                                                                                                                   626
                                                                                                                                                                                                                                                                            423
                                                                                                                                                                                                                                                                                                        989
                                                                                                                                                                                                                                                                                                                                   483
                                                                                                                                                                                                                                                                                                                                                              746
                                                                                                                                                                                                                                                                                                                                                                                         543
                                                                                                                                                                                                                                                                                                                                                                                                                    806
                                                                                                                                                                                                                                                                                                                                                                                                                                              603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               956
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         723
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      843
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           903
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 963
                            386
                                                                                                                                                                 303
                                                                                                                                                                                            999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                              요
                                                                                                                                                                                                                                                                                                                                                                                  임
                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                     ò
                                                셤
                                                                              ò
                                                                                                      음
                                                                                                                                      δ
                                                                                                                                                          g
                                                                                                                                                                                         Š
                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The present invention relates to a novel Helicobacter felis urease X and Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis infections the licobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCCCATATTATGGACGAAGCGCCGTGGAAAAAAACCGTTGCCCAGCTTATGGAAGAG 385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    al Helicobacter felis urease X and Y subunit polypeptides, useful in diagnosis of Helicobacter felis infections and in the preparation of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GTGAAACTCACACCCAAAAGACAAGAAAGTTCTTGTTATTATGCGGGGGGAAGTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGAAAGCGCAAAGCAGAGGGCTTAAAGCTCAACCCGAAGCCATTGCTTACATTAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGAAAGCGCAAAGCAGAGGGCTTAAAGCTCAATCAACCCGAAGCCATTGCCTACATTAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GTGAAACTCACACAAAAAGCAAGAAAAGTTCTTGTTATATTATGCGGGGGGAAGTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                           ф,
                                                                                                                                                                                                           immunogenic fragment; antibacterial; Vaccine; Helicobacter felis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 2183;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 2183 BP; 638 A; 505 C; 550 G; 490 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 1948; DB 7; Length 2
Pred. No. 0;
0; Mismatches 145; Indels
                                                                                                                                                                                                                                                                                                                                 /*tag= b
/product= "urease protein"
                                                                                                                                                                                                                                                                                                         "urease protein'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Disclosure; SEQ ID NO 7; 76pp; English.
                                                                                                                                                                               subunit encoding sequence #2
                                                                                                                                                                                                                                                                 Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ureaseXY subunit of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ;
0
                                                                                               ВР
                                                                                                 2183
                                                                                                                                                                                                                                                                                                                                                                                                                                 11-JUL-2001; 2001EP-00202666
                                                                                                                                                                                                                                                                                                                                                                                                                                                           17-JUL-2000; 2000EP-00202565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         67.6%;
larity 93.3%;
Conservative
                                                                                                                                                                                                                                                                                        / rag= a
/product= "
694. .2181
/*:>~
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         P-PSDB; ADJ58244, ADJ58245.
                                                                                                                                                    (first entry)
                                                                                               DNA;
                                                                                                                                                                                                                                                                              .683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (ALKU ) AKZO NOBEL NV.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Cattoli
  2611
                           NCAATG 2407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WPI; 2002-124384/17
                                                                                                                                                                                                                                      felis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local Similarity
                                                                                               standard;
 ACAATG
                                                                                                                                                                                                                                    Helicobacter
                                                                                                                                                                                                                                                                                                                                                                           EP1176192-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Kusters JG,
                                                                                                                                                   06-MAY-2004
                                                                                                                                                                                                                                                                                                                                                                                                      30-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best Local Sim
Matches 2035;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ო
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      266
  2606
                           2402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                vaccines
                                                                                               ADJ58243
                                                                                                                                                                               UreaseXY
                                                                                                                         ADJ58243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Novel
                                                                   CDS
```

1465

g ò g δ

8

1285 1082

1225 1022

1165

1045

745

542

625

422

362

505

302

445

685 482 805

602

865 662 925 722 985 782

(first entry)

```
Urease; urease gene cluster; urease structural gene;
urease accessory gene; ureABIEFGH; Helicobacter bizzozeronii infection;
antibacterial; gene; ds.
                   H. bizzozeronii urease gene cluster, ureABIEFGH
                                                                                                                                                 12-AUG-2003; 2003US-00639273
                                                                                                                                                                     16-AUG-2002; 2002US-0404337P.
                                                                                  Helicobacter bizzozeronii
                                                                                                                                                                                                                                    Chang Y, Simpson KW,
                                                                                                                                                                                         CHANG Y.
SIMPSON K W.
ZHU J.
                                                                                                                                                                                                                                                         WPI; 2004-533502/51.
                                                                                                                                                                                                                                                                   GENBANK; AF330621
                                                                                                       US2004142343-A1
07-0CT-2004
                                                                                                                            22-JUL-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               243
                                                                                                                                                                                         (CHAN/) (SIMP/) (ZHUJ/)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                    2125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2042
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2162
1323 AGAAGCGGGGCGCGATTGGCTTTAAATTGCATGAAGACTGGGGCACAACACCAAGTGCGAT
                                                                                                                                                             1443 GGTCAATGAGGCAGGTTATGTGAGATGACACCCTAAATGCAATGAAGGGGCGCGCCCATCCA
                                                                                                                                                                                                     1503 TGCCTACCACATTGAGGGAGGGGGGGGGGAGCACTCACCTGATGTTATCACCATGGCAGG
                                                                                                                                                                                                                                                                                                                                    TTTACAATTTTCTCAAAGCCGTATCCGCCCCGGATCTATTGCCGCTGAGGATGTGCCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATAC
                                                                                                                           CGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACGGATAC
                                                                                                                                                 1646 AGTCAATGAGGCAGGTTATGTAGATGACCCCTAAATGCAATGAACGGGCGCGCCATCCA
                                                                                                                                                                                            TGCCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGG
                                                                                                                                                                                                                                                GGAGCTCAATATTCTACCCTCCTCCACCACCCCCATATTAATACGT
                                                                                                                                                                                                                                                                               TGCAGAACACTTAGACATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGA
                                                                                                                                                                                                                                                                                          TITACAATITITCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCA
                                                                                                                                                                                                                                                                                                                                                                               TGAAGATGGTGCAGATAACGACAACTTCCGCATCAAACGCTATATCTCCAAATACACAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2043 AGGIGGCATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCCGTGCCCACGCCTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2306 ACCGGTTATTACCGCGAAATGTTTGGCCATCACGGCAAGGCGAAATTTGACACCGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2103 GCCGGTTTATTACCGCGAAATGTTTGGGCACCACGGCAAGGCGAAATTTGACACCAGCAT
                                                              AGAAGCGGGCGCGATTTGAAATTGCATGAAGACTGGGGCACAACACCAAGTGCGAT
                                                                                                                                                                                                                                     CGAGCTCAATATTCTACCCTCCTCCACCACCCCCACTATTCCCTATACCATTAATACGGT
                                                                                                                                                                                                                                                                                                                                                                 AGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                     TGAAGATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CAACCCCCCTTTGACCCACGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCCAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1923 TAATCCCGCTTTGACCCATGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGGCAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CGCCGACTTGGTGGTGGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGCCGGTATGGTGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCACTCCCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CACTITIGITICCAAAGICG 2385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |||||||| | | | | | CACTITICGIGICICAAGCG 2182
                                                                                                                                                                                                                                                                                                                        1886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2366
                      1466
                                                                                                        1586
                                                                                                                            1383
                                                                                                                                                                                            1706
                                                                                                                                                                                                                                     1766
                                                                                                                                                                                                                                                          1563
                                                                                                                                                                                                                                                                               1826
                                                                                                                                                                                                                                                                                                                                              1683
                                                                                                                                                                                                                                                                                                                                                                   1946
                                                                                                                                                                                                                                                                                                                                                                                                           2006
                                                                                                                                                                                                                                                                                                                                                                                                                                 1803
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2163
                                                                                                                                                                                                                                                                                                                                                                                                                                                      2066
셤
                   Š
                                      임
                                                                              셤
                                                                                                       ð
                                                                                                                        셤
                                                                                                                                            ò
                                                                                                                                                               엄
                                                                                                                                                                                         ò
                                                                                                                                                                                                         g
                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                              원
장
                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                qq
                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                            임
                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ર્જ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                             ò
```

Zhu

```
The invention relates to an isolated nucleic acid molecule conferring on Helicobacter bizzozeronii an ability to produce urease, where the nucleic acid molecule is a urease gene cluster comprising at least one urease cacessory gene. The nucleic acid molecule is a present one urease accessory gene. The nucleic acid molecule is chosen from urea, ures, ures, ures, ures, ures, ures and ureic acid conclusion on also relates to an isolated protein encoded by the nucleic acid, bizzozeronii comprising a nucleic acid and a carrier, and an isolated antibody or its binding portion raised against the nucleic acid. The nucleic acids, proteins and antibodies are useful for vaccinating mammals conclusion acid in the sequences. The sequences are useful for approximate to a sequences of tissue or body fluids which involves administering the sequences. The sequences are useful for cor providing a nucleotide sequence as a probe in a nucleic acid involves providing a nucleotide sequence as a probe in a nucleic acid and detecting any reaction which indicates that H. bizzozeronii is present in the sample. This sequence represents the H. bizzozeronii.
Novel isolated nucleic acid molecule having urease gene cluster, and conferring on Helicobacter bizzozeronii ability to produce urease, useful as vaccine for preventing disease in mammals infected by H.bizzozeronii.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       303 CCGAAGCCATTGCTTACATTAGTGCCCATATTATGGACGAAGCGCCCCTGGAAAAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    creagecagnaecercarcarecerarererareareaagaagaagagecegegegaaaaaaaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         183 AAATTTAACAAAGAAGTAATAAGTGAAACTCACACCCAAAGAGGAAAAAGTTCTTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2319 AAATTTGGTAGAAGGAGTTTAGGATGAATTAACCCCTAAAGAGCTGGACAAGCTCATGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               363 CCGTTGCCCAGCTTATGGAAGAGTGCATGCACTTTTTGAAAAAAGATGAAGTAATGCCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            / Match 41.1%; Score 1184.4; DB 12; Length 8407; Local Similarity 68.5%; Pred. No. 1.5e-255; les 1681; Conservative 0; Mismatches 741; Indels 32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 8407 BP; 2264 A; 1937 C; 1969 G; 2237 T; 0 U; 0 Other;
                                                                                                                                                                          Claim 2; SEQ ID NO 1; 40pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local Similarity 68.5
Matches 1681; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
```

ADQ37847 standard; DNA; 8407

ADQ37847

ADQ37847 ID ADQ3 XX AC ADQ3 XX

RESULT 6

239 GTOTOGOGOMATTCATCCAACACACACACACACTCTTAAACTCCACTCATACACACACACTCTTAAACTCCACTCA	1471 IGGGCTTTTTCCCCAAAGGCAATAGCTCTAGCAAAAACAACTTGTAGAACAAGTAGAAG 1530 	1531 CGGGCGGATTGGTTTTAAATTGCATGAAGACTGGGGCACAACACCAGTGCGATCGAT	1591 ACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACAGTCA 1650 	1651 ATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATGAACGGGCGCGCCATCCAT	1711 ACCACATTGAGGGGGGGGGGGGGCACTCACCTGATGTTATCACCATGGCGGGCG	3	AACACTTAGACATGCTCATGACATGCCACCTAGACAAACGCATCCGCGAGGATTAC 18 	1891 AATTITCTCAAAGCCGTATCCGCCCGGCTCTATCGGGGTGAAGATGTGCTCCATGATA 1950	1951 IGGGTGTGGTGGGTGAGGTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGA 2010		2071 ATGGCAAGATAACGATAATTTCCGCATTAAGGGCTACATCTCCCAAATACACTATCAACC 2130 	435	ACTIGGIGGIGGIGGADATCCTGCCTTITITGGCGIDADAGCCGADATCGIGATCADAGGGG 225	GTATGGTGGTCGTTCTCTGAATGGGCGATTCTPACGCGTCTGTGCCCATTCCCCACCGG	11 TTATTACCGCGAATGTTTGGGCATCACGCGAAGGGAATTTGACACCGCATCACTT 237 	2371 TTGTTTCCAAAGTCGCCTATGAAAATGGCGTGAAAAAAGCTGGGCTTAGAGCGCCAAG 2430 	TTCTACCGGTCAAAAACTGCCGTAACATCACCAAGAAAGA	2491 CGGCAAAATCACCGTCGATCCGAAACCTTCGAGGTCTTTGTAGATGGCAACTCTGCA 2550
1319 GTOTOGCCGANTTGATCCAAGAACCCTTTAAACCTTTAAACCTGATGAACCCCCTGAAACCCCCTTAAACCTGAAACCCCTTAAACCTAAACCCCTTAAACCTAAACCCAAACCCCTTAAACCTAAACCCAAACCCCTTAAACCTAAACCCAAACCCAACCTAAACCCAACCCAACCAACCCAACCCAACCCAACCCAACCCAACCCAACCCAACCCAACCCAACCCAACCCAACCAACCAACCCAACCAACCAACCAACCAACCAA	& 43	& a	රු අ	දු පු	රු පු	& g	& 8	දු දු	Qy QD	& 93	δλ Op	o O	& 8	è 8	රු පි	& g	& 8	ò 8
1319 GTOTOGCCGANTTGATCCAAGAACCCTTTAAACCTTTAAACCTGATGAACCCCCTGAAACCCCCTTAAACCTGAAACCCCTTAAACCTAAACCCCTTAAACCTAAACCCAAACCCCTTAAACCTAAACCCAAACCCCTTAAACCTAAACCCAAACCCAACCTAAACCCAACCCAACCAACCCAACCCAACCCAACCCAACCCAACCCAACCCAACCCAACCCAACCCAACCCAACCAACCAACCCAACCAACCAACCAACCAACCAA																		
	GTGTGGCGGATTTGATGCAAGAAGCAGGACACTTCTTAAAGCTGATGATGTCATGCCCG 2551 GGGTGGGTAATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAAC 482	GIGIAGCCCATATGGGGGGGGGGGGGGGGGTTGGAACTTCCCTGATGGGGGCAAAAC 261 TTGTAACTGTGAATTGGCCCATCGAACCAGAGGGCGCGAAGTGAAAT 542	TGGTFACCCATCCATTGAAGATGGTGGGCTTAAATTGGCTCCGGGTGAAGGTAA TTGGTTGCGATAAAGACATCGAGCTCAATGCAGGCAAAGGAAGTAACCGAACTTGAGGTTA 	CTAATGAAGGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAAC 66	AGGCACTAAAATTCCATCGTGAAAAACCTATGGCAAACGCCTAGATATTCCCTCTGGCA 72	GGCA 7 	AAAC 8 AAAA 2	 GATA	ACCT 	ACGGACCCACCAAGGCGATAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAG 	AACATGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGGGGGTAAAACTATCCGTG	AGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTAGTCATCATCAACAAACA	CGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAAA 117 	TCCATGGCATTGGCAAGGCAGGAAAGACATGCAAGATGGCGTAAGCTCATATGG 123 	TCGTGGGTGTGGGCACAGAGCACTAGCAGGGAAGGTATGATTATTACCGCTGGGGGAA 129	TCGATTCACACACCCACTTCCTTTCTCCACAACAATTCCCTACCGCTCTAGCCAATGCG 135 	TTACAACCATGTTTGGAGGCGGCACAGGTCCTGTAGATGGGAAGGAGTACTATCA 141 	CTCCGGGCAAATGGAACTTGCACGGCAGCGGGAGGAGAGAGTATTCTATGAATG

ښ :

137 301 197 361 257

8 a

```
GTAGAACATGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGCGGGTAAAACTATC 1046
                                                                                                                                                                                                                                                                                                                                                                                subunits of Helicobacter pylori clinical isolate CPM630. To obtain pORV214, a genomic DNA library of CPM630 was screened with anti-felicobacter urease antibody. A 17 kb Sall fragment from an isolated clone was subcloned into pUCI8 to give pSCP1. PCR primers (AAT44322-53) were used to amplify a 2.5 kb fragment from pSCP1, which was inserted into pET24+ to give pORV214. The vector was utilised in the prodn. of recombinant, enzymatically inactive, multimeric urease in E. coli transformants for use in vaccines to treat or prevent Helicobacter infection. (Updated on 16-OCT-2003 to standardise OS field)
                                                                                                                                                                                                                                  CTCCACTACGCTGGAGAATTGGCTAAAAAACGCAAAGAAAAAGGCATTAAGCTTAACTAT
                                                                                                                                                                                                                                                                                                                                            GTAGAAGCAGTAGCTTTGATTAGTGCCCCATATTATGGAAGCGAAGCGAGAGCTGGTAAAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CTTGTAACTGTGAATTGGCCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGATGCCTAGACTTTGACAGAGAAAACTTTCGGTAAACGCTTAGACATTGCGAGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          735 AAAATTGCTTTACACAGAGCTAAAGAGCGTGGTTTTCATGGCGCTAAAAGCGATGACAAC
                                                                                                                                                                                                                                                                       TTATATTATGCGGGCGAAGTGGCTAGAAAGCGCAAAGCAGAGGGCTTAAAAGCTCAACCAA
                                                                                                                                                                                                                                                                                                                            CCCGAAGCCCATTGCTTACATTAGTGCCCCATATTATGCACGAAGCGCCCCCTGGAAAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACTAATGAAGGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AACAGAAGAATCTTTGGATTTAACGCATTGGTTGATAGACAAGCAGACGAAAGCAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATGTATGGTCCTACTACAGGCGATAAAGTGAGATTGGGCGATACAGACTTGATCGCTGAA
                                                                                                                                                                                                                    182 AAAATTTAACACAAGGAGTAATAGGTGAAACTCACACCCAAAGAAGGAAAAAGTTCTTG
                                                                                                                                                                                                                                                                                                                                                                                                         GGGGTGGGTAATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  crestaacestscataecectatreasseceaatscraatrastrectsstssstate---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITGGITGCGATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TICTTAAAAAAGAGACATCACTATCAACGAAGGCAAAAAAGCCGTTAGCGTGAAAGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAAAATGTTGGCGACAGACCGGTTCAAATCGGCTCACACTTCCATTTCTTTGAAGTGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Acadecichaadartricacecrocecaadaaaaareceragaarricarricacarricacer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGTAAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCATAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -----ATCAAGTAAGGAGACTCCCATGAAA---ATGAAAAAACAAGAATATGTAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                195 TATGTAAAAACAATTAAGGAGTAAGAAATGAAAAAGATTAGCAGAAAAGAATATGTTTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACCTACGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAA
                                                                                                                                                                                          Gaps
                                                                                                                                                                                          38;
                                                                                                                                                              Length 2735;
                                                                                                                                     Sequence 2735 BP; 875 A; 562 C; 635 G; 663 T; 0 U; 0 Other;
                                                                                                                                                                                          Indels
                                                                                                                                                              Score 1075.2; DB 2;
Pred. No. 3.5e-231;
0; Mismatches 798; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CATAAAGCGCTTGACAAGGCGAAATCTCACGGATTT
                                                                                                                                                                37.3%;
66.0%;
                                                                                                                                                                 Query Match
Best Local Similarity 66.0
Matches 1622; Conservative
                                                                                                                                                                                                                                              78
                                                                                                                                                                                                                                                                                                    138
                                                                                                                                                                                                                                                                                                                               302
                                                                                                                                                                                                                                                                                                                                                         198
                                                                                                                                                                                                                                                                                                                                                                                   362
                                                                                                                                                                                                                                                                                                                                                                                                            258
                                                                                                                                                                                                                                                                                                                                                                                                                                      422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       662
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        675
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   842
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       878
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               987
      888888888888
                                                                                                                                                                                                                       ઠ
                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     multimeric
bismuth
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A CDNA clone (AAT44351), derived from pORV214, includes the ureA and ureB sequences coding for the urease A (AAW07193) and urease B (AAW07194)
                                                                                                                                                                                                                                                                                                                                                                                                             the
                                                                                                                                                                                                                                                                                                                                            for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ξ
                                                                                                                                                                                                                                                                                                                                                                                                          /note= "Lac operator provides inducible expression of urease genes"
                                                                                                                                                                                                                                                                                                                                        promoter provides transcription initiation
        2604
                               4772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Kleanthous
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sussman I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      contg. m
agent or
      2551 CCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTCTAGG
                                 criccadageaecegaradareaeceraecaeaeceraeaecricrierierae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    l response to Helicobacter - contg
antibiotic, anti-secretory agent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Soman G,
Bhagat H,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      , Thomas WD,
Guirakhoo F,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "urease A subunit"
                                                                                                                                                                                             H. pylori ureA + ureB gene locus in pORV214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                subunit,
                                                                                                                                                                                                                       ф
                                                                                                                                                                                                                       Urease; ureA gene; ureB gene; vaccine;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
"T7 terminator"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Disclosure; Page 68-70; 98pp; English
                                                                                                                                                                                                                                                                                                                                                                                               function= "operator"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               щ
                                                                                                                                                                                                                                                                                                       ocation/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                      complement (46. .67)
/*tag= c
                                                                                                                                                                                                                                                                                                                                                                                                                                                       /*tag= c
/note= "BL1 primer"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        primer"
                                                                                                                                                                                                                                                                                                                                                         genes"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "urease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ackerman SK,
                                                                                                   BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ermak T,
                                                                                                                                                                                                                                                 Helicobacter; strain CPM630.
unidentified bacteriophage; T7
                                                                                                  AAT44351 standard; cDNA; 2735
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /*tag= f
/note= "BL2 p
2693. .2735
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            96WO-US005800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    95US-00431041
95US-00568122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    e for inducing mucosal complex and pref. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2546. .2569
                                                                                                                                                                                                                                                                                                                                /*tag= a
/note= "T7
                                                                                                                                                                                                                                                                                                                                                          the urease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     822. .2531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   / rag= e
/product= '
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           P-PSDB; AAW07193, AAW07194
                                                                                                                                                       (revised)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .818
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        product=
                                                                                                                                                                                                                                                                                                                                                                         33. .43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note=
                                                                                                                                                                                                                                                                                                                                                                                      *tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RA, Pappo J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              102.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Monath TP,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 1996-497373/49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORAV-) ORAVAX INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           25-APR-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WO9633732-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     28-APR-1995;
06-DEC-1995;
                                                                                                                                                      16-OCT-2003
11-FEB-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                     primer_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             primer_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  31-OCT-1996
                                                                                                                                                                                                                                                                                                                                                                       misc_signal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     terminator
                                  4719
                                                                                                                             AAT44351;
                                                                                                                                                                                                                                                                           Chimeric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Lee CK,
Weltzin 1
                                                                                                                                                                                                                                                                                                                     promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Vaccine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    urease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CDS
```

377

481

434

541

494 661 554 721 614 781 674 841 734

601

926

854

794

Ωp

8

8 Y

ò

 8 6

g

Š

8 B 8

g

8 B 8

8 8 8 8

8 8 8 8

B & B & B

```
2486
                                                                                                                                                                                                                  2366
                                                                                                                                                                                                                                                                                                         2354
                                                                                                                                                                                                                                                                                                                                                                                                 2487 AAAACGGCAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTC 2546
                                                                                                                                                                                                                                                                            ACTITIGITICCAAAGTCGCCTAIGAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCG 2426
                                                                                                                                                                                                                                                                                                                                                                   235 CAAGTGTTGCCGGTAAAAATTGCAGAAATATCACTAAAAAAAGACATGCAATTCAACGAC 2414
                                                                                                                                                                                                                                                                                                                                                                                                                               2415 ACTACTGCTCACATTGAAGTCAATCCTGAAACTTACCATGTGTTCGTGGATGGCAAAGAA 2474
   1995 GAAGAAAAAGGCGATAACGACAACTTCAGGATCAAACGCTACTTGTCTAAATACACCATT 2054
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2475 GTAACTICTAAACCAGCCAATAAAGTGAGCTTGGCGCAACTCTTTAGCATTTTCTAGG 2532
                                                   CCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATC
                                                                                                                                                                                                                                 CAAGITCTACCGGTCAAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCAACGAC
                                                                                            2187 GCCGACTTGGTGTGTGGAATCCTGCCTTTTTTTGGCGTAAAACCCAAAATCGTGATCAAA
                                                                                                                                                        GCCGCTATGCTCCTTCTCTCAAATGCGCCATTCTAACGCGTCTGTGCCCACTCCCCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                             2547 TGCACCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCCAGCGCTACACTTTCTTCTAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Urease, UreA, UreB, vaccine, Helicobacter infection, UreI, heat shock protein; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /*tag= b
/note= "ureA Shine-Dalgarno site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /*tag= d
/note= "ureB Shine-Dalgarno
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Helicobacter felis urease ureA/ureB operon.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /*tag= a
/EC number= "3.5.1.5"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /*tag= c
/BC number= "3.5.1.5"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note= "UreA"
756. .759
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 'note= "UreB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAQ90180 standard; DNA; 2619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           93WO-EP003259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     766. .2475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (revised)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             43. .756
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Helicobacter felis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           19-NOV-1993;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WO9514093-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              25-MAR-2003
02-NOV-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              26-MAY-1995
                                                                                                                          2115
                                                                                                                                                        2247
                                                                                                                                                                                  2175
                                                                                                                                                                                                                2307
                                                                                                                                                                                                                                                                            2367
                                                                                                                                                                                                                                                                                                         2295
                                                                                                                                                                                                                                                                                                                                       2427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAQ90180;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 8
AAQ90180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                    ద
                                                                                                                                                      ò
                                                                                                                                                                               g
                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                         q
                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                         유
                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                8
                                                                                      ठे
                                                                                                                                                                                                                                                                                                                                                                                                                 1466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTGAATGAAGCCGGTTGTGTAGAAGACACTATGGCTGCTATTGCTGGACGCACTATGCAC 1634
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TTACAATTTTCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCAT 1946
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GAAGATGGCAAAGATAACGATAATTCCGCATTAAGCGCTACATCTCCAAATACACTATC 2126
                                                                                                                                                                                             ABABTCGCTGGCATTGGTAAAGGCGGTAACAAGACATGCAAGATGGCGTTAAAAACAAT 1154
                                                                                                                                                                                                                                1227 ATGGTCGTGGGGTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGGG 1286
                                                                                                                                                                                                                                                                                           GGAATCGATTCACACACCCCACTTCCTTTCTCCACAACAATTCCCTACCGCTCTAGCCAAT 1346
                                                                                                                                                                                                                                                                                                                                                                       1275 GGTGTAACAACCATGATTGGTGGTGGAACCGGTCCTGCTGATGGGCACTAATGCGACTACT 1334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GAAGCGGGCGCGATTGGTTTTAAATTGCATGAAGACTGGGGCACAACACCAAGTGCGATC 1586
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACA 1646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AATCATGCGTTAGATGTTGCGGACAAATACGATGTGCAAGTCGCTATCCACACAGACACT 1574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1707 GCCTACCACATTGAGGGAGGGGGGGAGACACTCACCTGATGTTATCACCATGGCAGGC 1766
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAGCTCAATATTCTACCCTCCTCCACCACCACTATTCCCTATACCATTAATACGGTT 1826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCCT 2066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CGTGAGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCACT 1106
                                                                        AGAGAAGGCATGAGCCAATCTAACAACCTAGCAAAGAAGAGTTGGATTTAATTATCACT 1034
                                                                                                         1107 AACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGGATTAAAAACGGC 1166
                                                                                                                             AAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCAT 1226
                                                                                                                                                                                                                                                            1155 CTTAGCGTAGGTCCTGCTACTGAAGCCTTAGCCGGTGAAGGTTTGATCGTAACGGCTGGT 1214
                                                                                                                                                                                                                                                                                                                       GGTATTGACACACACACCACTTCATTTCACCCAACAAATCCCTACAGCTTTTGCAAGC 1274
                                                                                                                                                                                                                                                                                                                                                                                                                                            ATCACTCCAGGCAGAAGAAATTTAAAATGGATGCTCAGAGCGGCTGAAGAATATTCTATG 1394
GCAGAACACTTAGACATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCAGAGCACATGGATGCTTATGGTGTGCCACCACTTGGATAAAAGCATTAAAAGAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1815 GİTCAGTİCGCİGATICAAĞGATCCGCCCTCAAACCATIGCGGCTGAAGACACTTIGCAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    dacargoggarrrrcrcaarcaccagrrcrgacrcrcaagcgargggcggrgaga
                                                                                                                                                                                                                                                                                                                                                     GGCGTTACAACCATGTTTGGAGGCGGCACAGGTCCTGTAGATGGCACGAATGCGACTACT
                                               1047
                                                                                                                                      1035
                                                                                                                                                                      1167
                                                                                                                                                                                                                                                                                                                       1215
                                                                                                                                                                                                                                                                                                                                                     1347
                                                                                                                                                                                                                                                                                                                                                                                                               1407
                                                                                                                                                                                                                                                                                                                                                                                                                                             1335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1395
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1455
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1587
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1575
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1767
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1695
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1827
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1755
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1875
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2007
                                                                                                                                                                                                  1095
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1467
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1527
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2067
                                                                           975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1935
```

```
ð
                                                                          원
                                                                                                       8
                                                                                                                                 Б
                                                                                                                                                               à
                                                                                                                                                                                     g
                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                             the Urea or Urea proteins, a urease- associated heat shock protein (AAR74318-39) or the Urel protein (AAR74340). The composition is used to prepare a vaccine for humans or animals, especially against H. pylori and H. felis. Antibodies against the proteins may be used for treating Helicobacter infection, and primers/probes to the DNA sequence may be used for detection of Helicobacter infection. (Updated on 25-MAR-2003 to
                                                                                                                                       Immunogenic composition against Helicobacter infection - also gene
fragment(s) and protein(s) from Helicobacter urease gene cluster and heat
                                                                                                                                                                                                                          components
                                                                                                                                                                                                         The sequence encodes urease UreA and UreB proteins, which are component of a novel immunogenic composition capable of inducing protective antibodies against Helicobacter infection. The composition may include antibodies against Helicobacter infection.
                                                                                                                                                                                                                                                                                                                                                                               Sequence 2619 BP; 772 A; 569 C; 665 G; 613 T; 0 U; 0 Other;
                         PASTEUR.
NAT SANTE & RECH MEDICALE.
                                                                   Ferrero R;
                                                                                                                                                                                              Claim 10; Fig 3; 128pp; English
93WO-EP003259
                                                                                                            P-PSDB; AAR74336, AAR74337
                                                                   Suerbaum S,
                                                                                               WPI; 1995-200383/26
                                                                                                                                                                  shock protein(s).
                         INST
19-NOV-1993;
                                                                                                                                                                                                                                                                                                                                                    correct PN
                                                                  Labigne A,
                        (INSP)
```

268 cedecagarrieccagaagaacecrreecegregrericaaacreaarracacceaaacec 148 TCCACACTCCGGTAGAGGATAATGGCCAAATTAGCCCCCGGCGAGGTCTTCTTAAA---AA 385 611 386 Argaggacarracrarraacgccggcaaagaagccarragcrrgaaagrgaaaarraaag 445 731 ATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTG 491 269 GCATGATTCATGAAGTGGGGATTGAAGCTAACTTCCCCGATGGAACCAAGCTTGTAACTA 328 TGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTTGGTTGCG 551 GCCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCACTAA 671 446 GCGATCGTCCTGTGCAGGTGGGATCACATTTCCACTTCTTCGAAGTGAATAAGCTCTTGG 505 ACTTCGATCGCGCAAAAGCTTTTGCAAACGCCTAGACATTGCATCTGGAACAGCGGTGC 565 GCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAG 791 GCTTTGAACCCGGGGAGGAAAAAGTGTGGAACTCATTGACATCGGCGGGAATAAGCGCA 625 ATAAGGAGTTTAGGATGAAACTAACGCCTAAAGAACTAGACAAGTTAATGCTCCATTATG <u> arrrigariscaasaassekasacrrisserriaaaaaaaaaarsirsarseksekaaa</u> ATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAG ACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATTATG AATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTAC Gaps 41; Length 2619; 0; Mismatches 804; Indels DB 2; Score 1062.6; DB 2 Pred. No. 2.3e-228; 36.9%; Matches 1606; Conservative Local Similarity 192 372 432 329 206 995 492 552 612 59 252 89 312 149 209 672 732 Query Match

792	792 IGATIGGCAIGAACGGGCTIGIGAAIAACAICGCGGAIGAACGCCAIAAACAIAAAGGGC 851
852	TTGACAAGGGAAATCTCACGGATTT
878	ATCAAGTAAGGAGACTCCCATGAAAATGAAAAACAAGAATATGTAAATACCTACG 933 ATAAACAATAAGGAAAAACCATGAAAAAGATTTCACGAAAAAAATATGTTTCTATGTATG
934	GACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAAC 993
994	AUGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGGGTAAAACTATCCGTGAGG 1053
1054 926	GTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCCTAGATTTAGTCATCACTAAGGGGA 1113
1114	TGATTATGGACTACACCGGGATTTACAAGCCGACATTGGGATTAAAAACGGCAAAATCC 1173
1174	
1234	TGGGTGTGGCGCACAGAGGACTAGCAGGGGAAGGTATGATTATTACCGCTGGGGGAATCG 1293
1294	ATTCACACACCCACTTCCTTTCTCCCACACAATTCCCTACCGCTCTAGCCAATGGCGTTA 1353
1354	
1414	CGGGCAATGGAACTTGCACCGCATGTTGCGCGCAGGAGAGAGTATTCTATGAATGTGG 1473
1474	
1534	
1594	GCTTGAGCGTGGCAGATGAATACGANGTGCAAGTTTGTATCCACACCGATACAGTCAATG 1653
1654 1526	AGGCAGGTTATGTAGATGACACCCTAAATGCAATGAAGGGGGGGG
1714	ACATTGAGGGGGGGGGGGGGGCACTCACCTGATGTTATCACCATGGCAGGCGAGCTCA 177
1774	ATATTCTACCCTCCTCCACCACCCCCACTATTCCCTATACCATTAATACGGTTGCAGAAC
1834	ACTTAGACATGCTCATGACATGCCACCTAGACAAACGCATCCGCGAGGATTTA

d

Š 셤 ð 셤 ò g ò 셤 ò 셤 ઢ 원 ઠે 셤 ð 셤

ઠે

g

유성

ઠે g ઠે 셤 ò 셤 ò g ò 셤 ઠે 셤 Š 셤 Š 요 Š ద ሯ

```
149 redecercatradecedecerereardeaaaagececereareeraaaaagecereeeg 208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     209 ATTTGATGCAAGAAGGCAGGACTTGGCTTAAAAAAGAAAATGTGATGGACGGCGTAGCAA 268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   269 gcargarircargaagrogogarirgaagcraacirccccgargcaaccaagcrigraacra 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    rccacacrccagradagaraardaccaarragcccccagcagarcrrcrraaa---aa 385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            552 ATAAAGACATGGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAG 611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      89 CGGGCAGATTGGCAGAAGAACGCTTGGCGCGTGGTGTGAAACTCAATTACACCGAAGCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTTGGTTGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    New immunogenic compsn. contg. UreB and HspA antigens of Helicobacter for treatment and prevention of esp. H pylori infection, also new antibodies specific for these antigens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ATAAGGAGTTTAAGGATGAAACTAACGCCTAAAGAACTAGACAAGTTAATGCTCCATTATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            192 ACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A portion (AAT45680) of plasmid pILL205 (CNCM I-1355) comprises the Helicobacter felis structural urease gene encoding urease subunits A (AAW06729) and B (AAW06730). pILL205 was obtd. by examining the expression of urease activity by H. felis cosmid clones and identification of the H. felis genes required for urease expression we cloned in E. coli. The urease gene can be used to design probes for detection of Helicobacter infection, or utilised in the prodn. of recombinant urease subunits for use in novel immunogenic compens. (Updated on 16-OCT-2003 to standardise OS field)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match 36.9%; Score 1062.6; DB 2; Length 2619; Best Local Similarity 65.5%; Pred. No. 2.3e-228; Matches 1606; Conservative 0; Mismatches 804; Indels 41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 2619 BP; 772 A; 569 C; 665 G; 613 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                   Ferrero RL, Thiberge J;
                                                                                                     /*tag= d
/standard_name= "URE B"
/product="urease B subunit"
                       Ā.
                         "urease subunit
  /standard_name= "URE A"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Example 1; Page 96-100; 184pp; English
                                                                                                                                                                                                                                                                                                                                                                                             (INRM ) INST NAT SANTE & RECH MEDICALE
                                                                                                                                                                                                                                                                                                            95US-00432697
95US-00447177
                                                                                                                                                                                                                                                                      96WO-EP001834
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 1996-505900/50.
P-PSDB; AAW06729, AAW06730.
                                                               g≈ c
.2475
                       /product=
756. .759
                                                                                                                                                                                                                                                                                                                                                                                                                                       Suerbaum S,
                                                               /*tag≈
766. .2
                                                                                                                                                                                                                                                                      32-MAY-1996;
                                                                                                                                                                                                                                                                                                            19-MAY-1995;
19-MAY-1995;
                                                                                                                                                                                                                                                                                                                                                                        INSP ) INST
                                                                                                                                                                                                                                                                                                                                                                                                                                     Labigne A,
                                                                                                                                                                                                                                07-NOV-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               372
                                              RBS
                                                                                    CDS
    요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                               2193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2425
GTGTGATCGCGATGACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTC 2013
                                                                                                                                                                             GGATCTTTTCTATCACCAGCTCCGACTCTCAGGCTATGGACGCGTAGGCGAGGTGATCA 1885
                                                                                                                                                                                                                              CTCGAACTTGGCAGACTGCGGATAAGAATAAAAAGAATTTGGTAAGCTTCCTGAAGATG 2073
                                                                                                                                                                                                                                                       2006 GGATCGCGCATGGGATTTCTGACTATGTGGGCTCTGTGGAAGTGGGCAAATACGCCGACC 2065
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAAGGCGGTA 2253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TCGTGCTTTGGAGTCCGGCTTTCTTTGGCATTAAGCCCAATATGATTATTAAGGGCGGAT 2125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATTACCGTGAAATGTTTGGACACCATGGGAAAAACAAATTCGACACCAATATCACTTTCG 2245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2306 CGCCAGTGAAAACTGTCGCAATATCACTAAAAAGGACCTCAAATTCAACGATGTGGACCG
                                                                                                                                                                                                                                                                                                                                      1946 AAGGCGATAACGACAACTTCCGCATCAAACGCTACATCTCTAAATACACCCATCAACCCCG
                                                                                                                                                                                                                                                                                                                                                                                             CTTTGACCCACGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAAGATCGCCGACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    rnarrececricreraaaredecearecearecererarreceaeceerer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTTCCAAAGTCGCCTATGAAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCGCCCAAGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   rercceaaccecrraceaccececacearcaacaacaacracecracarcecececac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2434 TACCGGTCAAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTTCAACGACAAAACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCT
                                                               TITCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGG
                                                                                                                                                                                                                                                                                                              2074 GCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTATCAACCCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCCACTCCCCAACCGGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Urease, UreA, UreB, heat shock protein A, HspA, vaccine, immunogen, antigen; antibody; chronic gastritis; ulcer; pILL205; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  craaadcagcagargaarricagccragcgaacrrraraarrirgricragg 2476
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTCTAGG 2604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Helicobacter felis; strain ATCC 49179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  H. felis structural urease gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAT45680 standard; DNA; 2619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /*tag= a
43..753
/*tag= b
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (revised)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      16-OCT-2003
07-MAR-1997
                                                                                                                                                                                      1826
                                                                                                                                                                                                                              2014
                                                                                                                                                                                                                                                                      1886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2494
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAT45680;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2554
```

g

S C

B 8 d 8 ద ð

8

a ò

ò

g

ò

g

à

a

ò

g

ò

g

ð

g

ò

251

88

311

371

431

491

1466 GCCTCAATGECCGATGAATACCATGCAAGGCCTATCCACCCCGATACCCT 1554 AGGCAGGTTATGTAGATGACCCTAAATCCAATGCAGGGCGCCCCCTACTCCTTCC 1526 AGGCAGGTTATGTAGATGACCCTAAATCCAATGCAGGGCGCCCCCTACTCCTTCCCTCCTCCTCCTCCTCCTCCTCCTCC	Db 2426 CTAAAGCAGCAGATGAATTGAGCCTAGCGCAACTTTATAATTTGTTCTAGG 2476 RESULT 10 AAQ75319 Btandard; DNA; 2619 BP. XX AC AAQ75319;
11. STATE CONTRICTOR OF THE STATE CONTRICTOR OF THE STATE	1405 1593 1465 1653

491

551

611 445 671

```
GTATGGGTCAGAGCAATAGCCCCTGATGAAACACCCCTAGATTTAGTCATCACTAACGCGA 1113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAAATCC 1173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              rcarreresacraracesecarrracaageceacarressarraaasaceseaagarre 1045
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TAGGTCCTGCTACAGAGGCTTTGGCAGCTGAGGGCTTGATTGTAACCGCTGGTGGCATCG 1165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGGGGTAAAACTATCCGTGAGG 1053
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCATAAAACATAAAGCGC 851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATACGCATATTCACTTTATCTCTCCCCAACAAATCCCTACTGCTTTTGCCAGCGGGGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CAACCATGTTTGGAGGCGCACAGGTCCTGTAGATGGCACGAATGCGACTACTATCACTC
                                                                                                               GCATGATTCATGAAGTGGGGATTGAAGCTAACTTCCCCGATGGAACCAAGCTTGTAACTA
                                                                                                                                                                                                                                                                                                                                                                                                             GCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TAAAACGCGCTAAAGAAAAGGTTTTGGGTCTGTAAACTGCGGTTGTGAAGCGACTAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GTCCCACTACCGGGGATCGTGTTAGACTCGGCGACACTGATTTGATCTTAGAAGTGGAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TGGGTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGGGGAATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATTCACACCCCACTTCCTTTCTCCACAACAATTCCCTACCGCTCTAGCCAATGGCGTTA
                                                                                                                                                              TGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTTGGTTGCG
                                                                                                                                                                                                  TCCACACTCCGGTAGAGGATAATGGCCAAATTAGCCCCCGGCGAGGTCTTCTTAAA---AA
                                                                                                                                                                                                                                                                        386 ATGAGGACATTACTATTAACGCCGGCAAAGAAGCCATTAGCTTTGAAAGTGAAAATAAAG
                                                                                                                                                                                                                                                                                                              GCCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCACTAA
                                                                                                                                                                                                                                                                                                                                                446 GCGATCGTCCTGTGCAGGTGGGATCACATTTTCCACTTCTTCGAAGTGAATAAGCTCTTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    rcrariescrirraarrcrrresresarcscaasccsariescaresraaaaacresscr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                746 ATABACBATABGGBABABCCATGABABAGATTTCACGABABGBATATGTTTCTATGTATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1174 ATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCATATGGTCG
                  209 ATTTGATGCAAGAAGGCAGGACTTGGCTTAAAAAAGAAAATGTGATGGACGGCGTAGCAA
                                                                                        432 ATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTG
                                                                                                                                                                                                                                      ATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAG
                                                                                                                                                                                                                                                                                                                                                                                    <u> AATTCGATCGTGAAAAGCCTATGGCAAACGCCTAGATATTCCCTTCTGGCAACACGCTAC</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTGACAAGGCGAAATCTCACGGATTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1046
                  372
                                                                                                                                                                                                  329
                                                                                                                                                                                                                                                                                                                                                                                                                      909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  792
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        934
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  866
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1054
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          926
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1226
                                                                                                                                                              492
                                                                                                                                                                                                                                      552
                                                                                                                                                                                                                                                                                                              612
                                                                                                                                                                                                                                                                                                                                                                                                                                                            732
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        852
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                878
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  986
                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                           ద
                                                                                     8
                                                                                                                 d
                                                                                                                                                     8
                                                                                                                                                                                               g
                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             89 CGGCCAGATIGGCAGAAGGCTIGGCGCGTGGTGTGAAACTCAATTACACCGAAGCGG 148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TCGCGCTCATTAGCGGGCGTGATGGAAAAGGCGCGTGATGGTAATAAAAGCGTGGCGG 208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Vaccine compositions include the A and B subunits (given in AAR67371) of H. felis urease encoded by the ureA/ureB gene (AAQ75319) region of the urease gene cluster of plii205 (GNCM I-1355), as well as the heat shock proteins HSPA (AAR67374) and HSPB (AAR67373) encoded by the urease—associated HSP gene cluster region (AAQ75321) of plii689 (CNCM I-1356). Recombinant products are expressed in Escherichia coli. (Updated on 25-field)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Helicobacter pylori and Helicobacter felis - used to develop
or detection, treatment and prevention of Helicobacter infection.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATAAGGAGTTTAGGATGAAACTAACGCCTAAAGAACTAGACAAGTTAATGCTCCATTATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TTGCTTACATTAGTGCCCATATTATGGACGACGCGCCGTGGAAAAAAACCGTTGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATG
                                                                                                         Urease; ureA gene; ureB gene; immunogen; vaccine; diagnostic;
Helicobacter pylori; heat shock protein; HSP; chaperonin; pILL205; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 2619;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 2619 BP; 773 A; 570 C; 664 G; 612 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                        subunit"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 1061; DB 2;
Pred. No. 5.4e-228;
0; Mismatches 805;
                                                                                                                                                                                                                                                                                                              subunit'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Thiberge J;
                                                                                                                                                                                                                                                                                                                                                                                                                          m
                                                                                                                                                                                                                                                                                                              4
                                                                                                                                                                                                                                                                       /*tag= b
/label= UreA gene
/note= "encodes urease A
756. 759
                                                                                                                                                                                                                                                                                                                                                                                  /*tag= d
/label= UreB_gene
/note= "encodes urease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (INSP ) INST PASTEUR.
(INRM ) INST NAT SANTE & RECH MEDICALE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ferrero R,
                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Disclosure, Fig 3; 168pp; English.
                                                                                                                                                              Helicobacter felis, ATCC 49179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       36.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  94WO-EP001625
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    93EP-00401309
93WO-EP003259
                                                                                                                                                                                                                                                                                                                                                                 .2475
                                   (first entry)
                                                                                                                                                                                                                                        ๙
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity 65.5
Matches 1605; Conservative
                                                                                                                                                                                                                                                      43. .756
                                                                                                                                                                                                                     31. .36
/*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Suerbaum S,
                                                                                                                                                                                                                                                                                                                                                  *tag=
 (revised)
                  (revised)
                                                                       Urease ureA/ureB gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1995-006797/01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   P-PSDB; AAR67371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19-MAY-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    19-MAY-1993;
19-NOV-1993;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          WO9426901-A1
                 25-MAR-2003
22-JUN-1995
16-0CT-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              24-NOV-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Labigne A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          prods.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (INRM
                                                                                                                                                                                                  Key
                                                                                                                                                                                                                                                      CDS
                                                                                                                                                                                                                                                                                                                               RBS
                                                                                                                                                                                                                                                                                                                                                                 CDS
```

625

685 877 745 933 993

985

셤 ò 요 δ g

ò

```
Helicobacter pylori.
Salmonella typhimurium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 2001-343379/36.
                                                                                                                                                                                                                                                                                                                                                                                                                                      (ORAV-) ORAVAX INC.
                                                                                                                                                                                                                                                                                                    Escherichia coli.
                                                                                                                                                                                                                                                                                                                                         WO200132014-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Kleanthous H,
                                                                                                                                                                                                                                                                                                                                                                                                              01-NOV-1999;
                                                                                                                                                                                                                                                                                                                                                                10-MAY-2001
                                                                                                                                                                                                                                                                                                                  Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Inducing treating b
           2366
                                  2554
                                                          2426
                                                                                                                                            AEB55130;
                                                                                             RESULT 11
AEB55130
                                                                                                                      셤
                                 ò
                                                                                                                                           1653
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2305
                                                                                                                                                                                                                  ACACTGAAGGGCTGGGGTGGACACGCTCCAGATGTTATCAAAATGGCAGGGGAATTTA 1645
                                                                                                                                                                                                                                                                                                                 ACATTCTACCCGCCTCTACTAACCCGACCATTCCTTTCACCAAAAACACTGAAGCCGAGC 1705
                                                                                                                                                                                                                                                                                                                                         ACTTAGACATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAAT 1893
                                                                                                                                                                                                                                                                                                                                                               ACATGGACATGTTAATGGTGTGCCACCACTTGGATAAAAGTATCAAGGAAGATGTGCAGT 1765
                                                                                                                                                                                                                                                                                                                                                                                                   GTGTGATCGCGATGACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTC 2013
                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGATCTTTTCTATCACCAGCTCCGACTCTCAGGCTATGGGACGCGTAGGCGAGGTGATCA 1885
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CTCGAACTTGGCAGACTGCGGATAAGAATAAAAAGAATTTGGTAAGCTTCCTGAAGATG 2073
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CACGCACTTGGCAGACAGACAAAACAAAAAGAGTTTGGGCGCTTGAAAGAGAAA 1945
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2074 GCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTATCAACCCCG 2133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2134 CTTTGACCCACGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGATCGCCGACT 2193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGATCGCGCATGCGATTTCTGACTATGTGGGCTCTGTGGAAGTGGGCAAATACGCCGACC 2065
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAAGGCGGTA 2253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2066 TCGTGCTTTGGAGTCCGGCTTTCTTTGGCATTAAGCCCAATATGATTATTAAGGCCGGAT 2125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTTTTG 2373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATTACCGTGAAATGTTTGGACACCATGGGAAAACAAATTCGACACCAATATCACTTTCG 2245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TTTCCAAAGTCGCCTATGAAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTC 2433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2434 TACCGGTCAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCAACGACAAAACGG 2493
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2306 ceccacreaaaacrercecaararcacraaaaaggaccreaaarreaccarereacce 2365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2494 CAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCT 2553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAGGCGATAACGACATCTCCGCATCAAACGCTACATCTCTAAATACACCATCAACCCCG
 CGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTATTCTATGAATGTGG
              GCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAAACAACTTGTAGAACAAGTAGAAGCGG
                                                                     <u> ectriririsecraaseseaarererciraceaacecrerriacesarcaearraaasese</u>
                                                                                             GGGCGATTGGTTTTAAAATCCACGAAGACTGGGGAAGCACACCTGCAGCTATTCACCACT
                                                                                                                                           GCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATG
                                                                                                                                                                   GCCTCAATGTCGCCGATGAATACGATGTGCAAGTGGCTATCCACACGGATACCCTTAACG
                                                                                                                                                                                          ACATTGAGGGAGGGGGGGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCA
                                                                                                                                                                                                                                                                                                                                                                                        TITCICAAAGCCGTAICCGCCCCGGCTCTAICGCGGCTGAAGAIGTGCTCCAIGAIAIGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCCACTCCCCAACCGGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTATTGCGCTCTCTCAAATGGGCGATGCCAATGCGTCTATTCCCACCCCTCAGCCCGTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      rerccaagcescrracaagcaagcarcaagaagaacraggcrragarcescescac
                                                                                                                                                                                                                                                                                                                 1646
                                              1474
                                                                     1346
                                                                                             1534
                                                                                                                     1406
                                                                                                                                            1594
                                                                                                                                                                    1466
                                                                                                                                                                                            1654
                                                                                                                                                                                                                   1526
                                                                                                                                                                                                                                                                  1586
                                                                                                                                                                                                                                                                                         1774
                                                                                                                                                                                                                                                                                                                                                               1706
                                                                                                                                                                                                                                                                                                                                                                                                                1766
                                                                                                                                                                                                                                                                                                                                                                                                                                      1954
                                                                                                                                                                                                                                                                                                                                                                                                                                                              1826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2014
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1946
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2246
                                                                                                                                                                                                                                           1714
                                                                                                                                                                                                                                                                                                                                                                                        1894
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2374
                     엄
                                                               g
                                                                                       ð
                                                                                                                  g
                                                                                                                                                             a
                                                                                                                                                                                         ò
                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     д
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
ò
                                              ò
                                                                                                                                           ò
                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    જે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
```

```
The invention relates to inducing an immune response against Helicobacter in a mammal, comprising mucosally administering to the mammal an attenuated Salmonella vector containing a nucleic acid molecule encoding a Helicobacter antigen. Also included is an attenuated Salmonella vector comprising a nucleic acid molecule encoding a Helicobacter antigen. The Helicobacter antigen is a urease, a urease subunit, or its immunogenic fragment (encoded by the ureA and ureB genes). The mammal is at risk of having but does not have Helicobacter infection or has a Helicobacter. The vector can be used in inducing an immune response infection. The attenuated Salmonella vector further comprises an htrA or infection. The attenuated Salmonella vector can be used to treat Helicobacter infection. The vector and the method can be used to treat Helicobacter induced gastroducdenal diseases, including acute, chronic or atrophic gastritis, peptic ulcer diseases, including acute, chronic or atrophic gastritis, peptic ulcer diseases (e.g. gastrit or duodenal culcers), and gastric carcinoma. Attenuated Salmonella vector pHRR3 was constructed expressing UreA and UreB and including an B. coll AmpR gene. The present sequence represents the pHRR3 plasmid. NOTE: pHRR3 is represented by both ABB55112 and ABB55130, the peptides expressed by the one ABB55130, yet Figure 4 shows all the peptides being expressed by the one
an immune response against Helicobacter in mammals, useful for
Helicobacter induced gastroduodenal diseases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           P-PSOB, ARB55113, ARB55114, ARB55115, ARB55116, ARB55117, ARB55118, ARB55119, ARB55120, ARB55121, ARB55122, ARB55123, ARB55124, ARB55125, ARB55126, ARB55127, ARB55128, ARB55139, ARB55131, ARB55132, ARB55133, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131, ARB55131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Circular; pHUR3; ds; vaccine; helicobacter pylori infection; urease; immune stimulation; antibacterial; Immunostimulant; antiulcer; cytostatic; antinflammatory; gastrointestinal-gen.; gastritis; peptic ulcer; carcinoma.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Salmonella vector pHUR3 expressing helicobacter antigens, SEQ ID 19.
                                                                                                                                                                                                                                                                  CTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTCTAGG
                                                                                                                                                                                                                                                                                                                                                                         Freeman
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Disclosure; SEQ ID NO 19; 63pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Londono-Arcila P,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AEB55130 standard; DNA; 4824
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-NOV-2000; 2000WO-US030191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            99US-00431705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 22-SEP-2005 (first entry)
```

```
셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8 8 8 8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                      6 8 6 8 6 6
                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                       යු දු
                                                                                                                                                                                                                                                                                                                                                                                                                                                               6 6 6 6
               ద
                                       8
                                                     g
                                                                        Š
                                                                                               ద
                                                                                                                      B 4
                                                                                                                                                       8 G
                                                                                                                                                                                                   8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CAATCTAACAACCCTAGCAAAGAGTTGGATTTAATTATCACTAACGCTTTAATCGTG 1033
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCACTAAACGCGATGATTATC 1121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACCACCTATGGCGAAGACTTAAATTTGGCGGGGTAAAACTATCCGTGAGGGTATGGGT 1061
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTAT 1001
                                                                                                                                                                                                                                                                                                                                                                                                                                                             366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     856
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      854 ACAGGCGATAAAGTGAGATTGGGCGATACAGACTTGATCGCTGAAGTAGAACATGACTAC 913
                                                                                                     196
                                                                                                                                                                         376
                                                                                                                                                                                  TIGATTAGTGCCCATATTATGGAAGAAGGAGCTGGTAAAAAAGACTGCGGCTGAATTG 256
                                                                                                                                                                                                                                                       496
                                                                                                                                                                                                                                                                                                                                      616
                                                                                                                                                                                                                                                                                                                                                                             676
                                                                                                                                                                                                                                                                                                                                                                                                                     736
                                                                                                                                                                                                                                                                                                                                                                                                                                        613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACCATTTATGGGGAAGAGTTAAATTCGGTGGCGGTAAAACCCTAAGAGAGGCATGAGC 973
                                                                                                                                                                                                               497 TGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTTGGTTGCGATAAA 556
                                                                                                                                                                                                                                                                                                                377 accccratrgaggccaarggraartagrrccrggrgagrrg---trcrraaaaargaa 433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGATTTAACGCATTGGTTGATAGACAAGCAGACGAAAAAAGAAAAAATTGCTTTACAC 733
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGAGCTAAAGAGCGTGGTTTTCATGGCGCTAAAAGCGATGACAACTATGTAAAAACAATT 793
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAGGAGACTCCCATGAAA---ATGAAAAACAAGAATATGTAAATACCTACGGACCCACC 941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     434 GACATCACTATCAACGAAGGCAAAAAAGCCGTTAGCGTGAAAGTTAAAAATGTTGGCGAC 493
                                                                                                                                                                                                                                                                    ATCCATGAAGTGGGTATTGAAGCGATGTTTCCTGATGGGACTAAACTCGTAAACCGTGCAT
                                                                                                                                                                                                                                                                                                                                                                                        494 AGACCGGTTCAAATCGGCTCACCTTCCATTTCTTTGAAGTGAATAGATGCTAGACTTT
                                                                                                                                                                                                                               GACATCGAGCTCAATGCAGGCAAAGAAGTAACCGGAACTTGAGGTTACTAATGAAGGGCCT
                                                                                                                                                                                                                                                                                                                                                                             AAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCACTAAAATTC
                                                                                                                                                  GAATTGGCTAAAAACGCAAAGAAAAAGGCATTAAGCTTAACTATGTAGAAGCAGTAGCT
                                                                                                                                                                         GTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTGTGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                    GATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATT
                                                                                                                                                                                                                                                                                                                                                                                                                                        GGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAAGTGATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                614 GAGCCTGGCGAAGAAAATCCGTAGAATTGATTGACATTGGCGGTAACAGAAGAATCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GGCATGAACGGCCTTGTGAATAACATCGCGGATGAACGCCCATAAACATAAAGCGCTTGAC
                                                                                                                                 GAAGTGGCTAGAAAGCGCAAAGCAGAGGCTTAAAGCTCAACCCAACCCGAAGCCATTGCT
                                                                                         GAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATGCGGGC
  both
                                                                      Gaps
sequence, therefore all encoded peptides are cross-referenced to
                                                                     38;
                             BP; 1389 A; 1090 C; 1146 G; 1199 T; 0 U; 0 Other
                                                 Score 1058.6; DB 5; Length
Pred. No. 2.2e-227;
0; Mismatches 799; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAGGCGAAATCTCACGGATTT-------
                                                Query Match
Best Local Similarity 65.7%;
Matches 1606; Conservative
                              Sequence 4824
                                                                                                                                                                                                                                                                                                                                                                                                                                        554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               734
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     794
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          942
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1062
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      914
                                                                                                                                                    137
                                                                                                                                                                                                                                                                         317
                                                                                                                                                                                                                                                                                                                                                                             617
                                                                                                                                                                                                                                                                                                                                                                                                                                                            737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  885
                                                                                                                                                                       317
                                                                                                                                                                                          197
                                                                                                                                                                                                              377
                                                                                                                                                                                                                                  257
                                                                                                                                                                                                                                                      437
                                                                                                                                                                                                                                                                                                                                     557
                                                                                                           77
                                                                                                                                 257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
SXSS
                                                                                         8 6
                                                                                                                           ò
                                                                                                                                             Д
                                                                                                                                                                    8 B 8
                                                                                                                                                                                                                           6 B 6 B
                                                                                                                                                                                                                                                                                                            8 & B
                                                                                                                                                                                                                                                                                                                                                                   8 6 B 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                    8 6 8 6
```

1693 1841 1901 1813 1961 2021 2081 2201 2113 1481 1781 TGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGTGGTC 2261 ATCCACTTCATTTCACCCCAACAATCCCTACAGCTTTTTGCAAGCGGTGTAACAACCATG 1273 ectacreaadecerradecederdaaderrrrearegraacegeregraareacadade GGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTA CCCTCCTCCACCACCACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGAC cargosarrascoagrarorascarcasrasaasrossocaaasroscorsacriosrarro GGTAAAGGCGGTAACAAAGACATGCAAGATGGCGTTAAAAAACAATCTTAGCGTAGGTCCT GGCAAAGGCAATAGCTCTAGCAAAAAACAACTTGTAGAACAAGTAGAAGCGGGGGGGCGTTT GTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGT rerieragaagacacrariegeracrariegeregeacgeacrariegaeacrarie ccoscriccacraaccccarcarccrircaccaraaaracaaaacaaaacacaraaac 1842 ATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAA 1902 AGCCGTATCCGCCCCGCCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATC 1814 TCAAGGATCCGCCCTCAAACCATTGCGGCTGAAGACACTTTGCATGACATGGGGATTTTC 1874 rcaarcaccagricreacricreaaccareaeccarereaegreaagriarcacrasaacr TGGCAGACTGCGGATAAGAATAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGAT AACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTATCAACCCCGCTTTGACC CACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGATCGCCGACTTGGTGGTG GACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATT GGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGGTGTG GGCACAGAAGCACTAGCAGGGGAAGGTATGATTATTACCGCTGGGGGAATCGATTCACAC TGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTTG GCGATGACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACT ACCCACTTCCTTTCTCCACAACAATTCCCTACCCCTCTAGCCAATGGCGTTACAACCATG TTTGGAGGCGCCACAGGTCCTGTAGATGCCACGAATGCGACTACTATCACTCCGGGCAAA 1034 1994 1122 1182 1094 1242 1154 1302 1214 1422 1482 1394 1542 1454 1602 1514 1662 1574 1722 1634 1782 1694 1754 2022 1934 2202

```
GGATTTAACGCATTGGTTGATAGACAAGCAACGAAAAGCAAAAAAATTGCTTTACAC 733
                                                                                                                                                                                                                                                                                                                                                                                                                              sednences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  377
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                497
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   464
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        797
ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                 2353
                                                                                                                                                                                                                                                                                                        2501
                                                                                                                                                                                                                                                                                                                                                                                       2561
                    TGGAGTCCAGCATTCTTTGGCGTGAAACCCAACATGATCATCAAAGGCGGATTCATTGCG 2173
                                                                                                                                                                                                                                                                                                                                                                                                                            GAAGTCAATCCTGAAACTTACCATGTGTTCGTGGATGGCAAAGAAGTAACTTCTAAACCA 2473
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The invention relates to inducing an immune response against Helicobacter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                an immune response against Helicobacter in mammals, useful for
Helicobacter induced gastroduodenal diseases.
                                                                                                                                                                 AAAAACTGCCGTAACATCACCAAGAAGACTTCAAGTTCAACGACAAAAATC
                                                            TTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCCACTCCCCAACCGGTTTATTACCGC
                                                                                     TTAAGCCAAATGGGGGATGCGAACGCTTCTATCCCTACCCCACCACAGATTTATTACAGA
                                                                                                                                          GAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAA
                                                                                                                                                                                                                         GTCGCCTATGAAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCGCCCAAGTTCTACCGGTC
                                                                                                                                                                                                                                                             aaaaatrigcagaaatatcactaaaaaaaacargcaarrcaacgacactaccecrcacarr
                                                                                                                                                                                                                                                                                                                                                                                       ACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAAACCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          P-PSDB; AEB55113, AEB55114, AEB55115, AEB55116, AEB55117, AEB55118, AEB55119, AEB55120, AEB55120, AEB55121, AEB55121, AEB55121, AEB551213, AEB55132, AEB55132, AEB55132, AEB551313, AEB55132, AEB55133, AEB55133, AEB55133, AEB55134, AEB55134, AEB55134, AEB55134, AEB55134, AEB55137, AEB55137, AEB55138, AEB55140,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Circular; pHUR3; ds; vaccine; helicobacter pylori infection; urease; immune stimulation; antibacterial; Immunostimulant; antiulcer; cytostatic; antiinflammatory; gastrointestinal-gen.; gastritis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Salmonella vector pHUR3 expressing helicobacter antigens, SEQ ID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GCCAATAAAGTGAGCTTGGCGCAACTCTTTAGCATTTTCTAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Freeman
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Kleanthous H, Londono-Arcila P,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ВP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ID NO 1; 63pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               standard; DNA; 4824
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-NOV-2000; 2000WO-US030191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     99US-00431705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      peptic ulcer; carcinoma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Helicobacter pylori.
Salmonella typhimurium.
Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2001-343379/36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (ORAV-) ORAVAX INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WO200132014-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-NOV-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             22-SEP-2005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Disclosure;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      10-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Inducing
                                                                                                                                          2322
                                                                                                                                                                                  2234
                                                                                                                                                                                                                         2382
                                                                                                                                                                                                                                                                                                        2442
                                                                                                                                                                                                                                                                                                                                               2354
                                                                                                                                                                                                                                                                                                                                                                                       2502
                                                                                                                                                                                                                                                                                                                                                                                                                              2414
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2562
                                                              2262
                                                                                                   2174
                                                                                                                                                                                                                                                                 2294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AEB55112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AEB55141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AEB55112
AEB7112
AEB712
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AEB7
ACC AE
                    g
                                                       ò
                                                                                         g
                                                                                                                            ò
                                                                                                                                                                          g
                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Б
```

```
c in a mammal, comprising mucosally administering to the mammal an attenuated Salmonella vector containing a nucleic acid molecule encoding the Helicobacter antigen. Also included is an attenuated Salmonella vector comprising a nucleic acid molecule encoding a Helicobacter antigen. Also included is an attenuated Salmonella vector comprising a nucleic acid molecule encoding a Helicobacter antigen. The Helicobacter antigen is a urease subunit, or its immunogenic fragment (encoded by the urea and urea genes). The mammal is at risk of having but does not have Helicobacter infection or has a Helicobacter in the attenuated Salmonella vector further comprises an hira or nire promoter. The vector can be used in inducing an immune response against Helicobacter in a mammal. The vector can be used to treat Helicobacter induced gastroduodenal diseases, including acute, chronic or atrophic gastric, peptic ulcer diseases (e.g. gastric or duodenal constructed expressing Urea and Urea and including an E. coli Ampk gene. The present sequence represents the pHUR3 plasmid. NOTE: pHUR3 is constructed expressed by the peptides being expressed by the one ABB55112 and ABB55130, the peptides expressed by the one Sequence, therefore all encoded peptides are cross-referenced to both
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  736
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GAGATCTCCATGAAACTCACCCCAAAAGAGTTAGATAAGTTGATGCTCCACTACGCTGGA 136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             436
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     376
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               556
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 796
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Aridcialgia a de construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de la construir de 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GACATCACTATCAACGAAGGCAAAAAGCCGTTAGCGTGAAAGTTAAAAATGTTGGCGAC 493
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TIGATIAGIGCCCATATIATGGAAGAAGCGAGAGCTGGTAAAAAGACTGCGGCTGAATTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            317 ATCCATGAAGTGGGTATTGAAGCGATGTTTCCTGATGGGACTAAACTCGTAACCGTGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    377 ACCCCTATTGAGGCCAATGGTAATTAGTTCCTGGTGAGTTG---TTCTTAAAAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCACTAAAATTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGACCGGTTCAAATCGCTCACACTTCCATTTCTTTGAAGTGAATAGATGCCTAGACTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAAGTGATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCCATAAACATAAAGCGCTTGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GAATTGGCTAAAAAAGCGCAAAGAAAAAGCCATTAAGCTTAACTATGTAGAAGCAGTAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAGGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GACAGAGAAAAACTITCGGTAAACGCTTAGACATTGCGAGCGGGACAGCGGTAAGATTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATATGCGGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTGTGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTTGGTTGCGATAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GAGCCTGGCGAAGAAAATCCGTAGAATTGATTGACATTGGCGGTAACAGAAGAATCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 4824 BP; 1389 A; 1090 C; 1146 G; 1199 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 5; Length 4824;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match 36.7%; Score 1058.6; DB 5; Best Local Similarity 65.7%; Pred. No. 2.2e-227; Matches 1606; Conservative 0; Mismatches 799;
```

2081

2141

2201

2261 2173

8 6 8 6

8 & g

8 8 8 8 8 8

8 8 8 8

8 8 8 8

8 8 8 8

원 장 임

ò ద ò

2381 2293 2441 2501

2561

g ò g ð

ò

```
2394 GCGGCTTATGACAAAGGCATTAAAGAAGAATTAGGACTTGAAAGACAAGTGTTGCCGGTA 2353
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2414 GAAGTCAATCCTGAAACTTACCATGTGTTCGTTGGATGGCAAAGAAGAAGTAACTTCTAAACCA 2473
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gastritis, peptic ulceration; duodenitis; heliobacter; campylobacter; ss.
                                                                                                                                                                                                                                                                                  2114 TGGAGTCCAGCATTCTTTGGCGTGAAAACCCAACATGATCATCAAAAGGCGGATTCATTGCG
                                                                                                                                                                                                                                                                                                                      2174 TTAAGCCAAATGGGGATGCGAACGCTTCTATCCCTACCCCACAACCGGTTTATTACAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2354 AAAAATTGCAGAAATATCACTAAAAAAAAGACATGCAATTCAACGACACTACCGCTCACATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2502 ACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAACCC
TGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGTGGTC
                                                                                                                                                                                                                                                                                                                                                                                                       2234 GAAATGTTCGCTCATCGTAAAGCTAAATACGATGCAAACATCACTTTTGTGTCTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCCAACGACAAAACGGCAAAAATC
                                         GCGATGACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACT
                                                         TGGCAGACTGCGGATAAGAATAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGAT
                                                                                                                AACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTATCAACCCCGCTTTGACC
                                                                                                                                                                                                                                                                                                                                                                               GAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCCAGCATCACTTTTGTTTCCAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                    GTCGCCTATGAAAATGGCCGTGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTCTACCGGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2474 GCCAATAAAGTGAGCTTGGCGCAACTCTTTAGCATTTTCTAGG 2516
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTCTAGG 2604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   encoding A and B subunits of H. pylori urease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
64. 717
/*tag= a
//abel= subunit A
/note= "66 kD"
721. .2400
/*tag= b
//abel= subunit B
/note= "31 kD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAQ12485 standard; DNA; 2767
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (revised)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Helicobacter pylori.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           27-AUG-2003
23-SEP-1991
               1814 '
                                                                                                2022
                                                                                                                                                       2082
                                                                                                                                                                                                            2142
                                                                                                                                                                                                                                                                   2202
                                                                                                                                                                                                                                                                                                                        2262
                                                                                                                                                                                                                                                                                                                                                                                                                                     2382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAQ12485;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DNA
                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8 8
                                                                                      ਨੇ
                                                                                                                    g
                                                                                                                                                     ò
                                                                                                                                                                        요
                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                             ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                         ò
                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1481
                                                                                                                                                                  ACCACCTATGGCGAAGAACTTAAATTTGGCGCGGGTAAAACTATCCGTGAGGGTATGGGT 1061
                                                                                                                                                                                                                       CAGAGCAATAGCCCTGATGAAAACACCCTAGATTAGTCATCACTAACGCGATGATTATC 1121
                                                                                                                                                                                                                                       1574 rereradadadacacrarescrecrarrecresadedecentarecacarrirecacacresa 1633
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GGCGCTGGCGGCGGCCACGCTCCTGATATTAAAGTAGCCGGTGAACACAACATTCTT 1693
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAA 1901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1754 ATGCTTATGGTGTGCCACCACTTGGATAAAAGCATTAAAGAAGATGTTCAGTTCGCTGAT 1813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1902 AGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATC 1961
                                                                                                             884
                                                        941
                                                                                   853
                                                                             1094 GGTAAAGGGGGTAACAAAGACATGCAAGATGGCGTTAAAAACAATCTTAGCGTAGGTCCT
                                                                                                                                                                                                                                                                                                                                                                                                          ATCCACTTCATTTCACCCCAACAAATCCCTACAGCGCTTTTGCAAGCGGTGTAACAACCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GTGGCAGATGAATACGATGTGCAAGTTTGTATCCACCGGTACAGTCAATGAGGCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Accarriatesceaasascriaaarrcssrssssaaasccraasassass
                                                                                                                                                                                                                                                                                                                                     GGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGGGTGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITGGAGGCGGCACAGGTCCTGTAGATGGCAAGATGCGACTACTATCACTCCGGGCAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GGCAAAGGCAATAGCTCTAGCAAAAAACAACTTGTAGAACAAGTAGAAGCGGGCGCGATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CCCTCCTCCACCACCCCCCACTATTCCCTTATACCATTGCGGTTGCAGAACACTTAGAC
                                                      AAGGAGACTCCCATGAAA -- - ATGAAAAACAAGAATATGTAAATACCTACGGACCCACC
                                                                                                                                                                                                                                                                                                                                                                                            GGCACAGAAGCACTAGCAGGGGAAGGTATGATTATTACCGCTGGGGGAATCGATTCACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCCACTTCCTTCTCCACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGGAACTTGCACGCATGTTGCGCGCAGCAGAGAGTATTCTATGAATGTGGGCCTTTTTG
                                                                                                                                                                                                                                                                                GACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATT
                         AGAĞCTAAAGAGCGTGGTTTTCATGGCGCTAAAAGCGATGACAACTATGTAAAAACAATT
  AAGGCGAAATCTCACGGATTT
                                                                                                                                                                                                                                                                                                          1034
                                                                                                                                                                                                                                                                                                                                                                                          1242
                                                                                                                                                                                                                                                                                                                                                                                                                                                 1302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1454
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1662
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1634
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1782
                                                        885
                                                                                794
                                                                                                             942
                                                                                                                                                                    1002
                                                                                                                                                                                                                                                   974
                                                                                                                                                                                                                                                                                                                                     1182
 857
                                                                                                                                                                                            914
                                                                                                                                                                                                                         1062
                                                                                                                                                                                                                                                                              1122
```

```
8
                                                           셤
                                                                                   જે
                                                                                                                ద
                                                                                                                                               8
                                                                                                                                                                  ద
                                                                                                                                                                                           8
                                                                                                                                                                                                                       용
                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                              The DNA is a 2.7 kb TaqI fragment encoding the A and B subunits of H. pylori (previously C. pylori) urease, i.e. the 66 and 31 kD antigens. From the sequence, probes and primers can be designed for the amplification (by PCR) of the gene, to produce a prods. common to all H. pylori strains so far tested and which do not occur in other ureases and can therefore be used as a specific indication of the presence of H. pylori. H. pylori (previously C. pylori) is strongly implicated in the pathogenesis of gastritis and duodenal and peptic ulcration in man. The primers-probes can be used for the detection of H. pylori DNA in gastric mucosa, saliva or faecal samples to provide an early diagnosis of infection. See also AAQ12434-Q12486. (Updated on 27-AUG-2003 to correct
                                                                                                                                                                                                     and
                                                                                                                                                                                                    Oligo:nucleotide(s) specific for Heliobacter pylori - used as probes primers to detect H pylori infection, in diagnosis of gastritis, and duodenal and peptic ulceration.
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 2767 BP; 867 A; 550 C; 635 G; 715 T; 0 U; 0 Other;
                                                                                                                                  Kleanthous
                                                                                                                                  BW,
                                                                                                                                                                                                                                                       Disclosure; Page 16; 28pp; English.
                                                                                                                                    Wren
                                                      89GB-00028625
                                                                             89GB-00028625
                                                                                                                                                             WPI; 1991-208084/28.
P-PSDB; AAR12515, AAR13550.
                                                                                                                                  Clayton CL,
                                                                                                        EXPL LTD
                                                                                                         3I RES
                                                                                                                                  Tabagchal IS,
                                                    19-DEC-1989;
                                                                               19-DEC-1989;
 WO9109049-A
                           27-JUN-1991
```

159 361 219 339 396 456 516 TTATATATTATGCGGGGGAAGTGGCTAGAAAGCGCAAAGCAGAGGGCTTAAAGCTCAACCAA 301 481 541 601 661 721 ACCGTTGCCCAGCTTATGGAAGAGTGCATGCACTTTTTGAAAAAAGATGAAGTAATGCCC 421 66 crccacracecreeaeaearraecraaaaeeeeaaeaaaaeeerraaeerraa CCCGAAGCCATTGCTTACATTAGTGCCCATATTATGGACGAAGAGCGCCGTGGAAAAAA GTGGAAGCGGTACGTTTGATTAGTGCCCATATTATGGAAGAAGCGAGACGTGGTAAAAAG <u> acreceecreaarrearecaaeaaeeeceacrerrrraaaacceearearereareare</u> GGGGTGGGTAATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAA CTTGTAACTGTGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAA crograacogracacacccrafraaggccaarggraaarragrrccraardarra---TTCTTAAAAAAGGCATCACTATCAACGAAAGGCAAAAAAGCCGTTAGCGTGAAAGTT ACTAATGAAGGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAAC AAGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGC AAAATTTAACACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGAGAAAAGTTCTTG TTTGGTTGCGATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTT ccccrierresceacasaccerrcaaarcescrcacacriccarricrrreaasreaar Gaps Length 2767; 39; Score 1053.6; DB 2; Length Pred. No. 2.5e-226; 0; Mismatches 804; Indels Query Match 36.5%; Best Local Similarity 65.7%; Matches 1615; Conservative 242 100 182 40 302 160 362 220 280 482 340 542 397 602 457 422

9

8

8 B 8

8 S

8 &

8 8 8 8 8

1046 1346 1466 1766 ricalidadecescificales de la contra dela contra de la contra de la contra de la contra de la contra dela contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra dela contra de la contra del contra della contra 986 966 636 841 969 756 <u>AGATGCTTTAGACTTTGACAGAGAAAAACTTTCGGTAAACGCCTTAGACATTGCGAGCGGG</u> AAAATTGCTTTACACAGAGCTAAAAGAGCGTGGTTTTTCATGGCGCTAAAAGCGATGACAAC TATGTAAAACAATTAAGGAGTAAGAAATGAAAAAGATTAGCAGAAAAGAATATGCTTCT <u>Archandececraeraegecearaaagreagarregecearaeagecrigaregergaa</u> Gradaacardaccaccarrrargergaagaccrraaarrcggcggcggraaaacccra AACGCTTTAATCGTGGATTACACCGGTATTTATAAAGCGGATATTGGTATTAAAGATGGC GGAATCGATTCACACCACTTCCTTTCTCCACACAATTCCCTACCGCTCTAGCCAAT GGTATTGACACACATCCACTTCATCTCCCCCAACAATCCCTACAGCTTTTGCAAGC ATCACTCCGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTATTCTATG GAAGCGGCGCGATTTGGTTTTAAATTGCATGAAGACTGGGGCACAACACCAAGTGCGATC GCCTACCACATTGAGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGGC AACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGC AGTAAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCATAAA Aacagaagaatctttggattttaacgcgttggttgataggcaagccgataacgaaagcaaa -----ATCAAGTAAGGAGACTCCCATGAAA---ATGAAAAAACAAGAATATGTAAAT ACCTACGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAA CGTGAGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCACT agagaaggcargagccaarcraaccaacccragcaaagaagaacrggarcraarcarcacr AACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGC <u>AAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCAT</u> ATGGTCGTCGTCGTCGTCGCACACACACACTACCACGCGCAAGGTATGATTATTACCCCTGGG criraccercerecracreaagecriraccesteaagerricarreracrecreer GGCGTTACAACCATGTTTGGAGGCGGCACAGGTCCTGTAGATGGCACGAATGCGACTACT Arcacrecaggragaagaaarriaaaarrcargcrecagaggggggggagaararrerag GAAGCTGGTGCGATTGGCCTTAAAATCCACGAAGACTGGGGGCACCACTCCTTCTGCAATC GATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACA CATAAAGCGCTTGACAAGGCGAAATCTCACGGATTT-637 1407 1417 722 782 842 878 757 927 817 987 877 1047 937 1107 997 1167 1057 1227 1117 1287 1177 1347 1237 1297 1467 1357 1527 1587 1477 1647 1707 g ò g 셤 8 g g g a 원 ઠે 8 8 8 ð ठे 셤 ò 8

/product= "H. bizzozeronii ureB"

ب ;

Simpson KW,

CHANG Y. SIMPSON K W.

ZHU J.

Location/Qualifiers 1. .1710 /*tag= a

```
The invention relates to an isolated nucleic acid molecule conferring on Helicobacter bizzozeronii an ability to produce urease, where the nucleic acid molecule is a urease gene cluster comprising at least one urease structural gene and at least one urease accessory gene. The nucleic acid molecule is chosen from ureh, ureb, ureb, urec, urec, ured, ureh and urel. The invention also relates to an isolated protein encoded by the nucleic bizzozeronii comprising a nucleic acid and a carrier and an isolated antibody or its binding portion raised against the nucleic acid. The nucleic acid, proteins and antibodies are useful for vaccinating mammals against onset of disease caused by infection of H. bizzozeronii, which
                                                                                                                                                                                                                                                                                                                                                                                 Novel isolated nucleic acid molecule having urease gene cluster, and conferring on Helicobacter bizzozeronii ability to produce urease, useful as vaccine for preventing disease in mammals infected by H.bizzozeronii.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   involves providing a nucleic acid as an antigen, providing an antibody, or providing a nucleotide sequence as a probe in a nucleic acid hybridisation assay, contacting the sample with the antigen or the probe, and detecting any reaction which indicates that H. bizzozeroni is present in the sample. This sequence represents H. bizzozeroni ureB DNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        involves administering the sequences. The sequences are useful for detecting H. bizzozeronii in a sample of tissue or body fluids which
                                                                                                                                                                                                                                                                                                                                                                                                                                               Claim 7; SEQ ID NO 4; 40pp; English.
                                                                                                                                                                         12-AUG-2003; 2003US-00639273
                                                                                                                                                                                                         L6-AUG-2002; 2002US-0404337P
 Helicobacter bizzozeronii.
                                                                                                                                                                                                                                                                                                                                   WPI; 2004-533502/51.
                                                                                                                                                                                                                                                                                                                                                   P-PSDB; ADQ37851
                                                                                                             US2004142343-A1
                                                                                                                                                                                                                                                                                                     Chang Y,
                                                                                                                                                                                                                                     (CHAN/) (SIMP/)
                                                                                                                                                                                                                                                                      (ZHOO)
                               Key
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                  2186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GAGCTCAATATTCTACCCTCCTCCACCACCCCCACTATTCCCTATACCATTAATACGGTT 1826
                                               GCAGAACACTTAGACATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGAT 1886
                                                                                                                    GCCGAACACATGGACATGCTTATGGTGTGCCACCACTTGGATAAAAGCATTAAAGAAGAT 1776
                                                                                                                                                           TTACAATTTTCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCAT 1946
                                                                                                                                                                                                                                               GIGATICCICGAACIIGGCAGACIGCGGATAAGAAIAAAAAAGAAIIIGGIAAGCIICCI 2066
                                                                                                                                                                                                                                                                                                          GAAGATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCCCAAATACACTATC 2126
                                                                                                                                                                                                                                                                                                                                                                               GAAGAAAAAGGCGATAACGACAACTTCAGGATCAAACGCTACTTGTCTAAATACACCATT 2016
                                                                                                                                                                                                                                                                                                                                                                                                                                              AACCCAGCGATCGCTCATGGGATTAGCGAGTATGTCGGTTCTGTAGAAGTGGCCAAAGTG 2076
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCTGACTTGGTATTGTGGAGTCCCGCATTCTTTGGTGTGAAACCCAACATGATCATCAAA 2136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2137 GGCGGGTTCATCGCATTGAGTCAATGGGTGATGCGAACGCTTCTATCCCTACCCACAA 2196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACTITIGITICCAAAGTCGCCTATGAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAAACGGCAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTC 2546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2377 ACTACCGCTCACATTGAAGTCAATTCTGAACTTACCATGTGTTCGTGGATGGCAAA-GA 2435
ACTTACCACACTGAAGGCGCTGGCGGCGGACACGCTCCTGATATTATTAAAGTGGCCGGT 1656
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2547 TGCACCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCCAGCGCTACACTTTCTTCTAGG 2604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2436 agraacrcraaaccaaccaaraaagraagcrragcgcaacrcrrragcarrrrcragg 2493
                                                                                                                                                                                                                       AACCCCGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCCGACTTGGTGGTGTGGATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATC
                                                                                                                                                                                      Grecagricecrearreascarrececereaacearrececrisasacaerrigear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GGCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCACTCCCCAA
                                                                                                                         1717
                                                                                                                                                                                       1777
                                                                                                                                                                                                                       1947
                                                                                                                                                                                                                                                    1837
                                                                                                                                                                                                                                                                                                                 1897
                                                                                                                                                                                                                                                                                                                                                                                                                                              2017
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2077
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2487
                                                            1657
                                                                                          1827
                                                                                                                                                        1887
                                                                                                                                                                                                                                                                                     2007
                                                                                                                                                                                                                                                                                                                                                  2067
                                                                                                                                                                                                                                                                                                                                                                                                                2127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2307
                                                                                                                                                                                                                                                                                                                                                                                 1957
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2367
                               1767
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                      g
                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                              요
                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                          ò
                                                    ద
                                                                                       ò
                                                                                                                                                       ò
                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                             ò
```

```
1019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1140 AAAGCCGACATTGGGATTAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAG 1199
                                                                                                                                                                                                                                                                                                                                                               1020 CTTAAATTTGGCGCGGGTAAAACTATCCGTGAGGGTATGGGTCAGAGCAATAGCCCTGAT 1079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .080 GAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTAC 1139
                                                                                                                                                                                                                                                                                                                                                                                            127 ATTAAGTTTGGTGGCGGTAAAACCATTCGCGATGGGATGGCACAAACCAAACGCCCCAGC 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 187 AGCCACGAACTCGATCTTGTGCTCACTAACGCCCTGATCGTGGATTACACCGGCATTTAT 246
                                                                                                                                                                                                    99
                                                                                                                                                                                                                                                                                         900 AAAATGAAAAACAAGAATATGTAAATACCTACGGACCCACCAAAGGCGATAAAGTGCGC
                                                                                                                                                                                          960 TIAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTATACCACCTATGGCGAAGAA
                                          Query Match 32.6%; Score 940.8; DB 12; Length 1710; Best Local Similarity 72.0%; Pred. No. 4.8e-201; Matches 1227; Conservative 0; Mismatches 477; Indels 0;
Sequence 1710 BP; 492 A; 436 C; 386 G; 396 T; 0 U; 0 Other;
                                                                                                                                                                                                       7
                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
```

Urease, urease gene cluster, urease structural gene, urease accessory gene, ureB; Helicobacter bizzozeronii infection; antibacterial; gene, ds.

ADQ37850 standard; DNA; 1710 BP.

07-OCT-2004 (first entry) H. bizzozeronii ureB DNA.

ADQ37850;

ö

Tue Nov

```
1387
                                                    2340
                                                                                             2400
                                                                                                                                        2460
                                                                                                                                                             1567
                                                                                                                                                                                                       1627
                                                                                                                                                                                                                             2580
          2280
                                                                        1447
                                                                                                                                                                                  2520
                                                                                                                                                                                                                                                 1687
                                                                                                                                                                                                                                                                                                                            ABA00816;
                                                                                                                                                                                                                                                                                 RESULT 15
                                                                                                                                                                                                                                                                                          8 8
                                           ਨੇ
                                                                   ద
                                                                                        8
                                                                                                             8 8
                                                                                                                                                     셤
                                                                                                                                                                                Š
                                                                                                                                                                                                  셤
                                                                                                                                                                                                                          ⋧
                                                                                                                                                                                                                                           셤
                                                                                                                                                   1439
                                                                                                                                                                                             1499
                                                                                                                                                                                                                                        1559
                                                                                                                                                                                                                                                                                 1619
                                                                                                                                                                                                                                                                                                                                                                      1739
                                                                                                                                                                                                                                                                                                                                                                                                               1799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TCCCAAGCGATGGGCCGTGTAGGCGAGGTCATCACCCGCACTTGGCAAACAGCGGACAAA 1146
                                                                                                                                                                                                                                                                                                                            GTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTA 1679
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCGGC 1919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CACTTGGATAAAACATCAAAGAAGATGTCCAGTTTGCTGATTCTAGGATTCGCCCCCAA 1026
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   accarceccercaegacaaacrecaegarareegearrrrerereaegeacrereae 1086
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AACAAAAAAAAArrirggicgcrigccrigaggaAAAAGGCGATAATGACAAcrirccGCATC 1206
                                                                                                                                                                        546
                                                                                                                                                                                                                                                                                                                                                                                           846
                                                                                                                                                                                                                                                                                                                                                                                                                                     906
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               996
                                        307 gacarigcaagariggcgrrrrgcaacaarcrrrrgcgrgggcccrgcracrgaggcrrrrggcc 366
AAAGCCGATATTGGCATTAAAAATGGCAAAATCCATGGCATTGGCAAAGCAGGCAATAAA 306
                                                                             CCTGTAGATGGCACGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATG
                                                                                                                                                               1500 AGCAAAAAACAACTTGTAGAACAAGTAGAAGCGGGCGGCGATTGGTTTTAAATTGCATGAA
                                                                                                                                                                                                                                                            TATGAACCCTCCCTGGTCGATCAACTCGAAGCTGGAGCCATTGGCTTTAAAATCCACGAA
                                                                                                                                                                                                                                                                                                                                          GTGCAAGTGGCTATCCACACCGATACCTTGAATGAAGCGGGCTGTGTGGAAGACACTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                1740 TCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCACCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                              TCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1327 GGCATTAAACCCAACATGATCATCAAAGGGGGATTCATCGCACTTTCTCAAATGGGGGAT
                                                               GGGGAAGGTATGATTATTACCGCTGGGGGAATCGATTCACACACCCCACTTCCTTTCTCCA
                                                                                                        CAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGT
                                                                                                                              TTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTTGGGCAAAGGCAATAGCTCT
                                                                                                                                                                                                          CTCCGTGCCTCTGAAGAATATGCCATGAACTTGGGCTATTTGGGTAAAGGGAATGTGTCT
                                                                                                                                                                                                                                                                                  GACTGGGGCACAACACCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGCGAT
                                                                                                                                                                                                                                                                                                      GACTGGGGTAGCACCTGCAGCCATCTACCATTGCTTGAATGTGGCTGACAATACGAT
                                                                                                                                                                                                                                                                                                                                                                      1680 AATGCAATGAACGGGCGCCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGGACAC
                                                                                                                                                                                                                                                                                                                                                                                       787 CAAGCCATTGCTGGGCGCACTATCCACACTTTCCACACTGAAGGTGCTGGTGGCGGGCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAAGCTCGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AATAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAGCGCTACATCTCCAAATACACTATCAACCCCGCTTTGACCCACGGCGTGAGCGAGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAGCGCTACATTTCCAAATACACCATCAACCCCGCTATTGCACACGGCATTTCTGAATAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GGCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGAT
                      GACATGCAAGATGGCGTAAGCCCCTCATATGGTCGTGGGTGTGGGCACACAGAAGCACTAGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATCGGCTCTGTGGAAGAGGGCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1147
                                                                                    367
                                                                                                                                                                                                                   547
                                                                                                                                                                                                                                                                                                       667
                                                                                                                                                                                                                                                                                                                             1620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               907
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1027
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1087
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1207
                                                               1260
                                                                                                                              427
                                                                                                                                                   1380
                                                                                                                                                                        487
                                                                                                                                                                                                                                                                                                                                                 727
                                                                                                                                                                                                                                                                                                                                                                                                                                                           1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2220
                      1200
                                                                                                        1320
                                                                                                                                                                                              1440
                                                                                                                                                                                                                                                                                   1560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                    ठ
                                   셤
                                                              8
                                                                              g
                                                                                                       8
                                                                                                                       g
                                                                                                                                            8
                                                                                                                                                                 요
                                                                                                                                                                                           8
                                                                                                                                                                                                            유
                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                         원
                                                                                                                                                                                                                                                                                 ŝ
                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                     ठे
                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                  유
                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
```

```
This sequence encodes H. felis urease B. This sequence was used in the method of the invention for raising an immune response in an animal. The method comprises administering to the animal a composition comprising a carrier and an antigen bound to a targeting moiety which binds to a least one receptor present in circulatory vessels in Gut Associated Lymphoid Tissue (GALT). The method is useful for raising an immune response in an animal against antigens from Salmonella, Cholera, Helicobacter pylori, HIV, Candida, P. gingivalis, gut parasites, gut
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gene; rat; IgG2a; light chain; E. coli; galactosidase; immunogen; immune response; circulatory vessel; Gut Associated Lymphoid Tissue; ALT; immune response; artigen; Salmonella; Cholera; immunity; Helicobacter Pylori; HIV; Candida; P. gingivalis; gut; parasite; toxin; hormone; hormone receptor; cancer; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ţ
                                                                                                                                                                                                                                                                   TACAAAGTTAAAGTGGGAAAGAGGTTACTTCCAAAGCAGCGGATAAAATCAGCCTA
GCCAATGCCTCTATCCCCCACTCCCCAACCCGTGTATTACCGCGAAATGTTTGGCCAAC
                                                                                                                                               GGTAAAGCCAAATTTGACACCAATATCACTTTTGTATCCCAAGTGGCTTATGACAACGGC
                                                                                                                                                                                                                                                                                                                                                                                ACCAAGAAAGACTTCAAGTTCAAGGACAAAAACGGCAAAAATCACCGTCGATCCGAAAAACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAACCCCACCTCGCAAGTGCCTCTA
                                                                         GGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGC
                                                                                                                                                                                                                            GTGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTCTACCGGTCAAAAACTGCCGTAACATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Raising an immune response in an animal by administering composition comprising carrier and antigen bound to targeting moiety which binds receptor present in circulatory vessels in Gut Associated Lymphoid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDICAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GCACAACTCTACAACTTGTTCTAG 1710
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCCCAGCGCTACACTTTCTTCTAG 2603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Disclosure; Page 27-28; 45pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   H. felis urease B coding sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (COUN-) COUNCIL QUEENSLAND INST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ABA00816 standard; cDNA; 1719
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       24-MAY-2002; 2002WO-AU000661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         25-MAY-2001; 2001AU-00005241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Boyle J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI; 2003-156789/15.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO200296949-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-APR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                B,
```

8 \times 9

원 장

ố <u>ନ</u>

6 B 6

42 43

8 S

8 G

6 B 6 B 6 B 6 B 6 B 6 B 6 B 6

면 장 임

```
1139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1619
                                                                                                                                                                                                                                                                                  GTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTA 1679
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCACCCCC 1799
                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                CTTAAATTTGGCGCGGGTAAAACTATCCGTGAGGGTATGGGTCAGAGCAATAGCCCTGAT 1079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               434
                                                                                                                                                                                                                                          74
    gut associated
                                                                                                                                                                                                                                                                                                                                                                                                                                             GAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATCGACTACACCCGGGATTTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCTCCAGATGTTATCAAAATGGCAGGGGAATTTAACATTCTACCGGCCTCTACTAACCGG
                                                                                                                                                                                                                                                                                                            CTCGGCGACACTGATTTGATCTTAGAAGTGGAGCATGATTGCACCACTTATGGTGAAGAG
                                                                                                                                                                                                                                                                                                                                                                                       ATCAAATTTGGGGGGGGGGTAAAACTATCCGTGATGGGATGAGTCAAACCAAACCCTAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GGGGAAGGTATGATTATCCGCTGGGGGAATCGATTCACACACCCCACTTCCTTTCTCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGGCACAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CAACAAATCCCTACTGCTTTTGCCAGCGGGTTACAACCATGATTGGAGGAGGCACAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TIGCGIGCAGCCGAAGAATACGCCATGAATCTAGGCTTTTTGCCTAAGGGGAATGTGTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GACTGGGGCACAACACCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1680 AATGCAATGAACGGGCGCGCCATCCATGCCTACCACATTGAGGAGCGGGTGGAGGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAGGCGATTGCCGGGCGCACCATCCATACCTTCCACACGAAGGGGCTGGGGGTGGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACCATTCCTTTCACCAAAACACTGAAGCCGAGCACATGGACATGTTAATGGTGTGCCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GACATGCAAGATGGCGTAGATAATAATCTTTGCGTAGGTCCTGCTACAGAGGCTTTGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CCTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTTGGGCAAAGGCAATAGCTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCAC
                                                                                                                                                                                                       AAAATGAAAAAACAAGAATATGTAAATACCTACGGACCCACCAAAGGCCGATAAAGTGCGC
                                                                                                                                                                                                                                        <u> Aagaittecacaaagaatatettectatetateeteeecactaceeegateeteaaa</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   rcrrangaarragarragercacraaceccrcarrereacranaceecarrae
ed toxins, gut hormones, gut hormone receptors or gut associ
The method is useful for raising both mucosal and systemic
against any antigen used in the composition
                                                                                                                                                               ö
                                                                                                                      Score 902.4; DB 8; Length 1719; Pred. No. 2e-192;
                                                                              Sequence 1719 BP; 490 A; 411 C; 421 G; 397 T; 0 U; 0 Other;
                                                                                                                                                               0; Mismatches 501; Indels
                                                                                                                    Query Match 31.3%;
Best Local Similarity 70.6%;
Matches 1203; Conservative (
                    cancers.
                                                                                                                                                                                                                                                                                                                                                                1020
                                                                                                                                                                                                                                                                                                                                                                                                                                               1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1620
                                                                                                                                                                                                                                                                                                                                                                                                        135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      735
                                                                                                                                                                                                                                                                                  960
                                                                                                                                                                                                                                                                                                                         75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  315
                                                                                                                                                                                                                                          15
```

```
2399
                                                          ACTATCGCGGCTGAAGACCAACTCCATGGGGATCTTTTCTATCACCAGCTCCGAC
                                                                                                1395 GCCAATGCGTCTATTCCCACCCCTCCACCCCGTCTATTACCGTGAAATGTTTGGACACCAT
                                                                                                                                                                                                                                                                                                                                                                   <u> Aacaaaaaaaagactrigaaaagagaaaaaaagacgaraacgacarcriccccarc</u>
                                                                                                                                                                                    GGCGTAAAACCCCAAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGAT
                                                                                                                                                                                                                                                                             2280 TCTAACGCGTCTGTGCCCACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCAAGAAAGACTTCAAGTTCAACGACAAAACGGGAAAAATCACGGTGGATCGGAAAACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                <u> Actaaaaaggaccrcaaatrcaacgargrgacgcacatatrgargrcaacccrgaaacc</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TATAAGGTGAAAGTGGCAAAGAGGTAACCTTTAAAGCAGCAGATGAATTGAGCCTA
                                                                                                                                AATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATT
                                                                                                                                                                          AAGCGCTACATCTCCAAATACACTTATCAACCCCGCTTTGACCCCACGGCGTGAGCGAGTAT
                                                                                                                                                                                                                     2160 ATCGGCTCTGTGGAAGAGGCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTT
                                                                                                                                                                                                                                                                                                                                                     GGCAAGGCGAAATTTGACACCCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAACCCCACCTCGCAAGTGCCTCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        00:34:36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              completed: November 29, 2005, e : 1579 secs
                                                                                                                                                                                                                                                                 2220
                                                                                                                                                                                                                                                                                                                                                       2340
                                                                                                                                                                                                                                                                                                                                                                                                                                            2460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2520
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1635
                                                                                                                                2040
                                                                                                                                                                          2100
1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Search co
                                         B 6
                                                                                                    요
                                                                                                                                             g
                                                                                                                                                                      $ 8 8
                                                                                                                                                                                                                                   q
                                                                                                                                                                                                                                                             $ B $
                                                                                                                                                                                                                                                                                                                          qq
                                                                                                                                                                                                                                                                                                                                                    8 8
                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8 8
                                                                              8
                                                                                                                             8
```

```
241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 10, Appli
Sequence 10, Appli
Sequence 11, Appli
Sequence 12, Appli
Sequence 2849, Appli
Sequence 22427, A
Sequence 11, Appli
Sequence 11, Appli
Sequence 11, Appli
Sequence 32550, A
Sequence 32550, A
Sequence 11, Appli
Sequence 11, Appli
Sequence 11, Appli
Sequence 12, Appli
Sequence 12, Appli
Sequence 12, Appli
Sequence 22, Appli
Sequence 22, Appli
Sequence 22, Appli
Sequence 22, Appli
Sequence 22, Appli
Sequence 3310, A
                                                                      November 29, 2005, 00:08:23; Search time 2049 Seconds (without alignments) 11635.245 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 1, Appli
Sequence 13, Appl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 13
Sequence 4,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Description
                                                                                                                                     2883
1 rggragattttccarcactt.....aaaaaagtagaagccacagg
                                                                                                                                                                                                                                                                                                                                                          / cgn2_6/prodata/1/pubpna/USO8_PUBCOMB.seq:*
/ cgn2_6/prodata/1/pubpna/USO8_PUBCOMB.seq:*
/ cgn2_6/prodata/1/pubpna/USO8_PUBCOMB.seq:*
/ cgn2_6/prodata/1/pubpna/USO9B_PUBCOMB.seq:*
/ cgn2_6/prodata/1/pubpna/USIOA_PUBCOMB.seq:*
/ cgn2_6/prodata/1/pubpna/USIOB_PUBCOMB.seq:*
5.1.6
Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-904-994B-1
US-09-904-994B-1
US-09-904-994B-4
US-09-904-994B-7
US-10-639-273-1
US-10-639-273-1
US-10-639-273-4
US-10-313-977-3849
US-09-895-913A-251
US-10-35-977-3849
US-09-895-913A-251
US-10-200-447A-5
US-10-500-447A-5
US-10-500-447A-5
US-10-282-122A-34390
US-10-282-122A-34390
US-10-282-122A-34390
US-10-282-122A-34390
US-10-282-122A-34390
US-10-282-122A-34390
US-10-391-687-1
US-10-319-667-1
US-10-319-670-1
US-10-282-122A-3430
US-10-282-122A-3430
US-10-282-122A-3430
US-10-282-122A-33102
US-10-282-123A-33102
                                                                                                                                                                                                                                  Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                  Applications NA Main:*
                                                                                                                                                                                                             9793542 seqs, 4134689005 residues
 version 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SUMMARIES
                                                                                                                                                                                                                                                                                               Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                OM nucleic - nucleic search, using sw model
                                                                                                                                                                       IDENTITY_NUC
Gapop 10.0 , Gapext 1.0
 GenCore (c) 1993
                                                                                                                                                                                                                                                           Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                         US-09-904-994B-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                *
Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2341
2439
1830121
1830121
1830121
5966
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2452
2452
2405
2407
2183
8407
1710
1710
1815
1710
1710
1717
2385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5966
1698
3919
           Copyright
                                                                                                                                                                                                                                                                                                                                                 Published  
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Perfect score:
                                                                                                                                                                        Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      664.4
662.8
662.8
658.6
634.8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score
                                                                                                                                                   Sequence:
                                                                                                                                                                                                            Searched:
                                                                                                                                                                                                                                                                                                                                                  Database
                                                                        Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  00000
```

600444446444461114	,0	09	120
680, App 258, App 57, Appl 23823, A 113582, A 11454, A 11604, A 12064, A 20659, A 20659, A 20659, A 20659, A 20559, A 20	Gaps		
Sequence Seq	0;	TGGTAAA TGGTAAA	CATATATAATATATTA
~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	Length Indels	rrereed rrereed	ATCATAT
258 258 57 23826 13823 141843 141843 141843 141843 141843 141843 130559 1-20660 121574 111793	DB 3;	rccrere rccrere	ACTTATT ACTTATT
95-159-680 14.170-25 14.170-25 14.170-25 14.170-25 12.122A-2 12.122A-1 12.122A-1 12.122A-1 12.122A-1 12.122A-3 13.122A-3	re 2880.6; ed. No. 0; Mismatches	ATATTGA ATATTGA	aataatt
100-100-100-100-100-100-100-100-100-100	Sco Pr	CCARCACTTCAAGCACATATTGATCCTGTGTTGTGGGTGGTGGTAAATTRCR 	ATTTTT ATTTTT
9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	9%; .0%; .0	CACT	TATTA TATTA
85814 9 US- 87263 5 US- 87263 5 US- 1701 7 US- 1701 7 US- 1704 7 US- 1704 7 US- 1704 7 US- 1704 7 US- 1704 7 US- 1701 7 US- 1702 1 US- 1703 1 US- 1703 1 US- 1703 1 US- 1704 1 US- 1705 1 US- 1705 1 US- 1706 1 U	99. 100 vative	TTTCCAR TTTCCAR	ATRCTAT
22.0 858 25.2 975 27.9 875 27.9 875 27.9 875 27.1 17 26.2 1.1 17 27.0	Similarity 3, Conservat	rggragattittccarcattcaagcacatattgatcctgtgttgttgtgggtggtaattrcr 	actigitaatrctattattaattttttaataattacttattatcatatataata
24 634.8 22.0 85814 9 US-15 25 630.6 21.9 8729 5 US-15 28 630.6 21.9 87563 5 US-15 28 617.2 21.4 1701 7 US-15 29 609.6 21.1 1704 7 US-15 31 602.8 20.9 1704 7 US-15 32 591.4 20.9 1704 7 US-15 33 590.6 20.9 1704 7 US-15 34 591.4 20.9 1704 7 US-15 35 578.6 20.1 1722 7 US-15 36 577.4 20.1 1702 7 US-15 37 573.8 19.9 1707 7 US-15 38 573.8 19.9 1707 7 US-15 39 555 19.3 3309400 3 US-16 41 555 19.3 3309400 3 US-16 42 555 19.3 3309400 3 US-16 43 548.2 19.0 2688 7 US-16 44 547.2 19.0 2688 7 US-16 45 553 19.2 1710 3 US-16 45 554 19.0 2688 7 US-16 47 52 19.0 2688 7 US-16 48 540.2 19.0 2688 7 US-16 49 556 19.3 3309400 3 US-16 41 555 19.3 3309400 3 US-16 42 553 19.2 1707 7 US-16 43 548.2 19.0 2688 7 US-16 44 547.2 19.0 2688 7 US-16 45 550 19.0 1 US/099049941 45 526 18.2 3110 7 US-16 46 547.2 19.0 2688 7 US-16 47 11 US-16 48 540.2 10.0 2688 7 US-16 48 540.2 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Match ocal Si s 2883;	н ч ж—ж	61 A 61 A
24 634.8 25 630.6 26 630.6 26 630.6 27 625.4 28 617.2 29 609.6 31 602.8 31 602.8 32 591.4 33 590.6 34 577.4 35 573.8 38 573.8 39 577.4 37 573.8 39 577.4 37 573.8 39 577.4 37 573.8 39 577.4 37 573.8 39 577.4 37 577.4 37 577.4 37 577.4 37 577.8 38 577.4 37 577.8 38 577.4 37 577.8 38 577.4 37 577.8 38 577.8 39 555.6 41 555.6 41 555.6 42 577.4 43 548.2 44 547.2 45 526.6 41 526.6 41 526.6 41 526.6 41 526.6 41 526.6 41 526.6 42 577.4 43 548.2 44 547.2 45 577.8 47	Query Match Best Local S Matches 2883	è a	Qy Dp
		0 0	0 1

240

GITATATTATGCGGGGGAAGTGGCTAGAAAGCGCAAAGCAGAGGGCTTAAAGCTCAACCA

1381 CTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATGT 1440 	1441 TGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTGGGCAAAGGCAATAGCTCTA 1500 	1501 GCAAAAACAACTTGTAGAACAAGTAGAAGCGGGGGGGGGTTGGTT	1561 ACTGGGGCACAACACCAAGTGCGATCGATCGCTTGAGCGTGGCAGATGAATACGATG 1620 	1621 TGCAAGTTTGTATCCACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTAA 1680 	1681 ATGCAATGAACGGCGCCCATCCATGCCTACCACATTGAGGGGGGGG	1741 CACCTGATGTTATCACCATGGCAGGCTCAATATTCTACCCTCCTCCACCACCAC 1800	1801 CTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCACC 1860 	1861 ACCTAGACAAACGCATCCGCGAGGATTACAATTTTCTCAAAGCCGTATCCGCCCGGGCT 1920 	1921 CTATCGCGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAAGCTCGGATT 1980 	1981 CGCAAGCAATGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAGA 2040 	2041 ATAAAAAGATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCGGATTA 2100 	2101 AGGGCTACATCTCCAAATACACTATCAACCCGGCTTTGACCCAGGGGGTGAGCGAGTATA 2160 2101 AGGGCTACATCTCCAAATACACTATCAACCCCGCTTTGACCCACGGGGTGAGGGGGTATA 2160	2161 TCGGCTCTGTGGAAGAGGCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTG 2220 2161 TCGGCTCTGTGGAAGAGGGCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTG 2220	2221 GCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGATT 2280	2281 CTAACGCGTCTGTGCCCACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCACG 2340 [2341 GCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGCG 2400 1	
ራ 8	& g	ò A	ò d	os da	S dd	δλ O	S G	λο qa	& 43	oy Op	y da	QQ DP	oy Ob	QY Dp	O.Y	ò a è	S G
GTTATATTATGGGGGGAAAGTGGCTAGAAAGCGCAAAGCAGAGGGCTTAAAGCTCAACCA ACCCGAAGCCATTGCTTACATTAGGACCCATATTATGGACGAAGCGCGCGTGGAAAAA	301 ACCCGARACCATTGCTTACATTAGTGCCCCATATTATGGARGCGCGCGGCGGTGGAAAAAA 360 361 AACCGTTGCCCAGCTTATGGAAGAGTGCATGCACTTTTTGAAAAAAAA	CGGGGTGGGTAATATGGTTCCCGATCTAGGTGTAGAACCCACCTTTCCTGATGGTAAGAACCGAACCTAGGTGATGGTACGAAACCGAACTTTCCTGATGGTACGAAACCGAACTTTCCTGATGGTACGAAACCGAACTTTCCTGATGGTACGAAACCAACTTTCCTGATGGTACAAAACAACCAAC	ACTTGTAACTGTGAATTGGCCCATCGAACCAGTGAGCACTTCAAAGCGGGCGAAGTGAAACTGTAACTGTGAATTGACCAGTGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGA	ATTIGGTIGCGATAAAGACATGGGGCCAAGGGCAAAGAAGAAGTGGGGGGGG	TACTAATGAAGGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGGTAATTACTAATGAAGAGCCTAATTGAAGGCCTAATTAAAGGGCCTAATTAAATGCCTTGCATGTGGGTAAGCCAATTCCACTTCCTTGAAGGCTAA	CAAGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGG	CAACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGG	CAGTAAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCATAA 84 CAGTAAAAAAGTGATTGGTGTTTGTAATAAAAAACGCGGATGAACGCCGAAAA 84		901 AAATGAAAAACAAGAATATGTAAATACCTACGGACCCACCAAAGGCGATAAAGTGCGCT 960 	TAGGAGATACCGATCTTTGGGCAGAACTAGAACATGACTATACCACCTATGGCGAAGAACTAGAACATGACATGACTATGGCGAAGAAGAAGAAGAAGAAGAAGAAGAAGAAGAAGAAG	TTAAATTTGGCCCGGGTAAACTATCCGTGAGGGTATGGGTCAGAGCAATAGCCTTGATG	AAAACACCCTAGATTTAGTCATCACTAAGGGGATGATTATGGACTACACGGGATTTACA	AAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAGG	ACATGCAAGATGGCGTAAGCCCTCATATGGTCGGGTGTGGGGCACAGAAGCACTAGCAGAAGCACTAGCAGAAGCGCTCGTGGGTGTGGGGCACAGAAGCACTAGAGCAGCAGAAGCCACAGAAGCAGAAGCACTCATATGGTCGTGGGTGTGGGGCACAGAAAGCACTCATAATGGTCGTGGGTGTTGGGGCACAGAAAGCACTCATAATGGTCGTTGGTTG	GGGAAGGTATGATTATTACCGCTGGGGAATCGATTCACACCCCCCTTCCTT	1321 AACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGCACAGGTC 1380

2461 CCAMANAGATTCAMOTTCAMOTTCAMACCACCAMATCACCATCANTCCACATCANACCACT	339 ACGAAGCGCCCTGGAAAAAAACCGTTGCCCAGCTTATGGAAGAGTGCATGCA	Qy 519 ACTTCAAAGCGGGCGAAGTGAAITTGGTTGCGATAAAGAATTCGAGCTCAATGCGGGGG 578 Db 361 ACTTTAAGGCGGTGAAATTTGGCTGTGATAAAGACTTGAACTCAAGGCAGGTA 420 Qy 579 AAGAAGTAACCGAACTTGAGGTTACTAATGAAGGCCTAAATCCTTGCATGTGGGTAGCC 638 Db 421 AGGAAGTTACCGAACTAACTAACGAAGGCCTAAATCCTTGCGATGTGGGTAGCC 648	69 54 75 60	Qy 759 TGCAGTTGATTCCTCTTGGTGGCAGTAAAAAAGTGATTGGCATGAACGGGCTTGTGAATA 818 Db [DD 661 ATATTGCGGACGATAAACACAAAGCGCTAGACAAAGCAAAATCTCACGGATTTA 720 Qy 879 TCAAGTAAGGAGTCCCCATGAAAATGAAAAAACAAGAATATGTAAATACCTACGGACCC 938 DD 721 TCAAGTAAGGAGTCCCCATGAAAATGAAAAACAAGAGTATGTAAATACCTACGGACCC 780	Qy 939 ACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGAC 998 Db 781 ACCACAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGAC 840 Qy 999 TATACCACCTATGGGAAGAACTTAAATTTGGCGGGGGTAAAACTATCCGTGAGGGTATG 1058 Db 841 TATACCACCTATGGCGAAGAACTCAAATTCGGTGAGGTAATCCGTGAGGGTATG 900	1059 GGTCA 901 GGTCA 1119 ATCGA 961 ATTGA	
				п. п.		Helicobacter vaccine gedesequenties N NUMBER: US/09/904,994B E: 2001-07-13 OS: 21 Ver. 2.1	· ન	77.3%; Score 2228; DB 3; Length 2452; 94.3%; Pred. No. 0; 94.3%; Pred. No. 0; wative 0; Mismatches 140; Indels 0; Gaps ATCCCATTGCTTTAAATTTAACACAAGGAGTAATAGGTGAAACTCACAC 21

1886 TTTACAMTITICTCAAAGCCGTATCCGCCCGGCTCTATCGCGGCTGAAGATGTGCTCCA 1740	SULT 4 -09-904 Sequence Sequence Sequence Sequence Sequence APPLIC APPLI
S41 CAAACCCGTAAAGTGCAGTTAATCCCTCTTGGCGGTAGTAAAAAAAA	1406 TATCACTCCGGCCAAATGCAACTGCACCGCATGTTGCGCGCAGCAGGAGGATATTCTAT 1465 1201 CATCACTCCGGCCAAATGCAACTGCACCGCATGTTGCGCGCGC

	566 CTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAGGGCCTAAATCCTTG 625 	626 CATGIGGGIAGCCATTICCACTICTITGAAGCTAACAAGGCACTAAAAITICGAICGIGAA 685 	686 AAAGCCTATGGCAAACGCCTACATATTCCCTCTGGCAACACGCTACGCATTGGGGCAGGA 745	746 CAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAAGTGATTGGCATGAAC 	806 GGGCTTGTGAATAACATCGCGGATGAACGCCATAAAGCATAAAGCCTTGACAAGGCGAAA 865 	866 TCTCACGGATTTATCAAGTAAGGAGACTCCCATGAAAATGAAAAAACAAGAATATGTAAA 925 	926 TACCTACGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGA 985 	986 AGTAGAACATGACTATACCACCTATGGGGAAGAACTTAAATTTGGGGGGGTAAAACTAT 1045 	1046 CCGTGAGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCAC 1105 	1106 TAACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGG 1165 	1166 CAAAATCCATGGCATTGGCAAGGCAGGAACAAGGCATGCAAGATGGCGTAAGCCCTCA 1225 	1226 TATGGTCGTGGCTGTGGCACAGAAGCACTAGCAGGGAAAGGTATCATTATTACCGCTGG 1285 		1346 TGGCGTTACAACCATGTTTGGAGGCGCACAGGTCCTGTAGATGGCACGAATGCGACTAC 1405	1406 TATCACTCCGGGCAAATGGAACTTGCACCGCATGTTGCGCGCGC	1466 GAATGTGGGCTTTTTGGGCAAAGCCAATAGCTCTAGCAAAAACAACTTGTAGAACAAGT 1525 	1526 AGAAGCGGGCGCGATTGGTTTTAAATTGCATGAAGACTGGGGCACAACACCAAGTGCGAT 1585
8 & 8	δ g	& g	දු පු	& g	SP 65	& a	& 4g	& A	& A	ନ ପ	& 8	& ଶ	B &	B &	P Q	& 6	ò
	Qy 2366 CACTTTTGTTTCCAAAGTCGCCTATGAAATGGCGTGAAAGAAA	QY 2426 CCAAGTICTACCGGTCAAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCAACGA 2485	OY 2486 CAAAACGGCAAAAATCACCGTCGATCGAAACCTTCGAGGTCTTTGTAGATGGCAAACT 2545	QY 2546 CTGCACCTCTAAACCCACGCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTCTAGGC 2605	Qy 2606 ACAATG 2611 Db 2402 NCAATG 2407	RESULT 5 US-09-904-994B-7	; Sequence 7, Application US/09904994B ; Publication No. US20040005325Al ; GENERAL INFORMATION: ; APPLICANT: AKZO No. US20040005325Alel N.V.		; NUMBER OF SEQ ID NOS: 21 ; SOFTWARE: Patentin Ver. 2.1 ; SEQ ID NO 7 ; LENGTH: 2183		; LOCATION: (3)(683) ; FATURE; ; NAME/KEY: CDS ; LOCATION: (694)(2181)	Ŋ	ACCCAAAGAGCAAGAAAGTTCTTGTTATTATTATGCGGGCGAAGTGGCT 26	266 AGAAAGCGCAAAGCAGAGGCTTAAAGCTCAACCGAAGCGAAGCGGTTACATTAGT [326 GCCCATATTATGGACGAGGCCGTGGAAAAAAACGTTGCCCAGCTTATGGAAGAG	123 GCCCAIAITAIGGACGAGGCGCCCCGTGGCAAAAAAACGGTGCTGAACIIAIGGAAAGAA 386 IGCAIGCACTITITIGAAAAAAAAGAAGAAATAAIGCCCGGGGTGGGTAATAGTCCCGAT	Db 183 TGTATGCACTTTTTGAAAAAGATGAGGTGATGCCCGGTGTGGGGAATATGGTCCCTGAT 242 Qy 446 CTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTGTGAATTGGCCCATC 505

242

2

Gaps

32;

2498

482

542

362

```
Tritrgaaaaakgaadacarcartrgaargcaggcaaacaagccaccactragaagrgc 2738
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2919 ACCAACGCATTTACGGCTTTAACTCTTTTGTGGATCGCCAAGCCGATACTGATGGCAAAA 2978
                                                                                                                                                                                                                                                                                                       2499 GTGTGGCGGATTTGATGCAAGAAGCAGGACACTTCTTAAAGCTGATGATGTCATGCCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTGTAACTGTGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       redraaccarccaraccececercaagarderegeearaaarregereegereaagrea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTGGTTGCGATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CTAATGAAGGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGCTTTTGGAATTTGATCGTGAAAAAGCCTATGGCAAACGCCTAGACATTGCTTCTGGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2859 CCGCTGTGCGCTTTGAACCCGGTGAGAAAAAAACCGTGGAATTGATTCAAATTGGCGGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               783 GTAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCCATAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2979 AACTTGCTCTCAAACGCGCCAAAGAACATGGCTTTGGTGTTTGTGAATTGCGGTTGCGATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1039 AAAAATAAGGAAAGGACAATCCGATGAAAAAAAAATCTCTCGAAAAGAATATGTTTCTATGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3099 ATGGACCCACTACGGCGATAAAGTGAGATTGGGCGATACCGACCTGATCTTAGAAGTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AACATGACTATACCACCTATGGCGAAGAACTTAAATTTTGGCGGGGTAAAACTATCCGTG
                                                                                                                                                                                                                       183 AAATTTAACACAAGGAGTAATAGGTGAAACTCACACACAAAGAGCAAGAAAAGTTCTTGT
                                                                                                                                                                                                                                                      2319 AAATTTGGTAGAAGGAGTTTAGGATGAAATTAACCCCTAAAGAGCTGGACAAGCTCATGT
                                                                                                                                                                                                                                                                                                                                                        CCGAAGCCATTGCTTACATTAGTGCCCATATTATGGACGAAGCGCGCCGTGGAAAAAAA
                                                                                                                                                                                                                                                                                                                                                                                       creagecagracicercarcacrecerarerearicareaaaaaaacecerecageraaaaaa
                                                                                                                                                                                                                                                                                                                                                                                                                       363 CCGTTGCCCAGCTTATGGAAGAGTGCATGCACTTTTTGAAAAAAAGATGAAGTAATGCCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGGTGGGTAATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTTGGTGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----ATCAAGTAAGGAGACTCCCATGAAAATGAAAA---ACAAGAATATGTAAATACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAG
                                                                                                                                                   Score 1184.4; DB 7; Length
Pred. No. 7.3e-260;
0; Mismatches 741; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               843 ATAAAGCGCTTGACAAGGCGAAATCTCACGGATTT---
                                                                                    TYPE: DNA
ORGANISM: Helicobacter bizzozeronii
                                                                                                                                                   41.1%;
PRIOR FILING DATE: 2002-08-16
NUMBER OF SEQ ID NOS: 41
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 1
LENGTH: 8407
                                                                                                                                                   Query Match
Best Local Similarity 68.5
Matches 1681; Conservative
                                                                                                                      US-10-639-273-1
                                                                                                                                                                                                                                                                                        243
                                                                                                                                                                                                                                                                                                                       2379
                                                                                                                                                                                                                                                                                                                                                        303
                                                                                                                                                                                                                                                                                                                                                                                        2439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2679
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              723
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                931
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                878
                                                                                                                                                                                                                                                    음
                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                      ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                              원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2245
                                                                                                                                                                                                                                                                                                                                      1682
                                                                                                                                                                                                                                                                                                                                                                       1945
                                                                                                                                                                                                                                                                                                                                                                                                                                         2005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1802
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2162
                                                                                                                     AGAAGCGGGGGGGGTTTGGCTTTAAATTGCATGAAGACTGGGGCACAACACCAAGTGCGAT 1382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1, Application US/10639273
Publication No. US20040142343A1
GENERAL INFORMATION
GENERAL INFORMATION
APPLICANT: Chang, Yung-Fu
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICATION NUMBER: 00/404,337
PRIOR APPLICATION NUMBER: 60/404,337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1923 TAATCCCGCTTTGACCCATGGCGTGAGGAGTATATCGGCTCTGTGGAAGAGGGCAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTGGCGTGAAACCTAAGATTGTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGGTGGCATGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCCCGTGCCCACGCCTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2103 GCCGGTTTATTACCGCGAAATGTTTGGGCACCACGGCAAGGCGAAATTTGACACCCAGCAT
                                                     CGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGGTAC
                                                                                                                                                                                         TGCCTACCACATTGAGGGAGGGGGGGGACACTCACCTGATGTTATCACCATGGCAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         rgaagargergeagaraaceacerrccccarcaacecrararcrccaaracaccar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCAT
                                                                                                     AGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATGAACGGGCGCGCCATCCA
                                                                                                                                                                     TGCCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGG
                                                                                                                                                                                                                                    CGAGCTCAATATTCTACCCTCCTCCACCACCCCCCACTATTCCCTATACCATTAATACGGT
                                                                                                                                                                                                                                                                                                                       TGCAGAACACTTAGACATGCTCATGACCTGCCACCTAGATAAGGGCATCCGCGAGGA
                                                                                                                                                                                                                                                                                                                                                                    TTTACAATTTTCTCAAAGCCGTATCCGCCCCGGGTCTATCGCGGCTGAAGATGTGCTCCA
                                                                                                                                                                                                                                                                                                                                                                                                    triacaatrircicaaagccgiatccgccccggarciatrgccgcrgaggargrgcrcca
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGGCGGTATGGTGGTCTTCTCTGAATGGGCGATTCTAACGCGTCTGTGCCCCACTCCCCA
                                  CGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATAC
                                                                                                                                                                                                                                                      TGCAGAACACTTAGACATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                     TGAAGATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CAACCCCGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCCAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CACTITIGITICCAAAGICG 2385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CACTITICGIGICICAAGCG 2182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 6
US-10-639-273-1
                                                                                                  1646
                                                                                                                                                                                                                                    1766
                                                                                                                                                                                                                                                                                                                                   1623
                                                                                                                                                                                                                                                                                                                                                                     1886
                                                                                                                                                                                                                                                                                                                                                                                                      1683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1743
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1803
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2163
                                                                   1383
                                                                                                                                                                   1706
                                                                                                                                                                                                    1503
                                                                                                                                                                                                                                                                     1563
                                                                                                                                                                                                                                                                                                    1826
                                                                                                                                                                                                                                                                                                                                                                                                                                       1946
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2066
   1323
                                    1586
                                                                                                                                                                                         g
                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                            d
                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                          q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S a
                                                        8 8
                                                                                                                          g y
                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                              δ
```

2858

2798

2918

842

782

3218

3098

990

2430

2490

ò g ò 8 8 Ω δ g 8

원 수 명

ò g \$ a

9 G

8 6

상 점

8 G

8 6 8 6

\$ 8 \$

요 &

6 8

g ò

```
1080 GAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTAC 1139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    960 TTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTATACCACCTATGGCGAAGAA 1019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1020 CTTAAATTTGGCGCGGGTAAAACTATCCGTGAGGGTATGGGTCAGAGCAATAGCCCTGAT 1079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          127 ATTAAGTTTGGTGGCGGTAAAACCATTCGCGATGGGATGGCACAAACCAACAGCCCAGC 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Chang, Yung-Fu
APPLICANT: Chang, Yung-Fu
APPLICANT: Chang, Yung-Fu
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
TITLE OF INVENTION: Laborate BIZZOZERONII UREASE GENES AND THEIR USES
TITLE OF INVENTION: IN DIAGNOSTIC AND TREATMENT METHODS
FILE REFERENCE: 19603/3881
CURRENT APPLICATION NUMBER: 04/0639,273
CURRENT FILING DATE: 2003-08-12
PRIOR APPLICATION NUMBER: 60/404,337
PRIOR FILING DATE: 2002-08-16
SEQ ID NOS: 41
SEQ ID NOS: 41
SEQ ID NOS: 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ccectattecacacacatttctcaatatctcccctctctaaaagtcccccc
                                                                                                                             GTATIGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCACTCCCCAACCGG
                                                                                                                                                                                                                                                              GATTCATCGCACTTTCTCAAATGGGCGATGCCAATGCCTCTATCCCCACTCCCAACCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TTGTTTCCAAAGTCGCCTATGAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCGCCAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4539 TIGTATCCCAAGTGGCTTATGACAACGGCATTAAAGAAGAGAGTTGGGCTTGCAAAGAGTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TTTTGCCAGTTAAAAACTGCCGCAACATCACCAAAAAAAGACCTCAAATTCAACGATGTTA
                                                                                                                                                                                                                                                                                                                                                                                           CGGCAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ccecacacarccaagrcaarccreaaaccracaaagrraaagregargcaaagaggrra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    900 AAAATGAAAAAACAAGAATATGTAAATACCTACGGACCCACCAAAAGGCGATAAAGTGCGC
                                                                                         ACTTGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCCAAAATCGTGATCAAAGGCG
                                                                                                                                                                                                                                                                                                                                                TITATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7 AAAATCTCTCGAAAAGAATATGTTTCTATGTATGGACCCACTACGGGCGATAAAGTGAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CTICCAAAGCAGGGGTAAAATCAGCCIAGCACAACTCTACAACTIGTICTAGG 4772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCCAGCGCTACACTTTCTTAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 1710;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         32.6%; Score 940.8; DB 7; 72.0%; Pred. No. 1.8e-204; rative 0; Mismatches 477;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORGANISM: Helicobacter bizzozeronii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; Sequence 4, Application US/10639273; Publication No. US20040142343A1; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity 72.0
Matches 1227; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH: 1710
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-10-639-273-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-639-273-4
                                                                                                                                                           4359
                                                                                                                                                                                                                         2251
                             4299
                                                                                                                                                                                                                                                                                                                                                       2311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4599
                                                                                                                                                                                                                                                                                        4419
                                                                                                                                                                                                                                                                                                                                                                                                                  4479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4659
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4719
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: DNA
                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ∂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                             8 8
                                                                                                                                   음 장
                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 6 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠ
                                                                                                                                                                                                                                                                                                                                                                                    1231 TCGTGGGTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGGGGAA 1290
                                                                                                                                                                                                                                                                                                                                                                                                                               1291 TCGATTCACACACCCACTTCCTTTCTCCACAATTCCCTACCGCTCTAGCCAATGGCG 1350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TIGACACCCACATTCCACTTTATTTCTCCCCAACAAATCCCCACAGCATTTGCCAGCGGA 3518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3519 TCACAACCATGATTGGTGGGGGAACAGGTCCAGCTGATGGGACTAACGCGACTACCATCA 3578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3699 CTGGAGCCATTGGCTTTAAAATCCACGAAGACTGGGGTAGCACCACCTGCAGCCATCTACC 3758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATGAAGCGGGCTGTGTGGAAGACACTTTGCAAGCCATTGCTGGGGCGCACTATCCACACTT 3878
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3939 TTAACATCCTCCCAGCTTCTACCAACCCCACCATTCCTTTCACCGGAATACAGAAGCCG 3998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2071 ATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTATCAACC 2130
                                                                                                                                                                                                                                                       1171 TCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCCAAGATGGCGTAAGCCCTCATATGG 1230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CTCCGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGAGAAAAGAGTATTCTATGAATG 1470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        crecededecericandancerranderecenterecerciandantarecentener 3638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TGGGCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAAAACAACTTGTAGAACAAGTAGAAG 1530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3639 resecratrices grades de la contrata de la resecració de la contrata de de desarrol de de desarrol de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata del contrata de la contrata de la contrata del contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata del contrata de la contrata del contrata de la contrata del contrata del contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata de la contrata del contrata de la contrata de la contrata de la contrata de la contrata de la contrata del contrata del contrata de la contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del contrata del 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1711 ACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGGCGAGC 1770
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1771 TCAATATTCTACCCTCCTCCACCACCCCCACTATTCCCTATACCATTAATACGGTTGCAG 1830
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AACACTTAGACATGCTCATGACATGCCACCACAGACAAACGCATCCGCGAGGATTTAC 1890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AATTITICICAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATA 1950
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TGGGTGTGATCGCCATGACAAGCTCGCAATTCGCAATGGGGCGTGCAGGCGAAGTGA 2010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2011 TICCICGAACTIGGCAGACTGCGGATAAGAATAAAAAAAATTIGGTAAGCTTCCTGAAG 2070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2131 CCGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGATCGCCG 2190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4239 AAAAAGGCGATAATGACAACTTCCGCATCAAGGGGTACATTTCCAAATACACCATCAACC
1051 AGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCACTAACG
                                                                                                                                                                 3339 TCCATGGCATTGGCAAAACAATAAAGACATGCAAGATGGGAAGATCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTACAACCATGTTTGGAGGCGGCACAGGTCCTGTAGATGGCACGAATGCGACTACTATACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGGATTAAAAACGGCAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACAGTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1111
                                                                                                                                                                                            3279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3579
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1591
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3819
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4059
```

ö 959

g

8

ò

g Š a ò g ò 셤

```
2459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1140 AAAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAG 11999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       135 ATCAAATTTGGGGGGGGGTAAAACTATCCGTGATGGGATGAGTCAAACCAATAGCCCTAGC 194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 960 TTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTATACCACCTATGGCGAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              crossosacacroarrigarcrrasaastosascarsarrecaccacriarssrsas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTTAAATTTGGCGCGGGTAAAACTATCCGTGAGGCTATGGGTCAGAGCAATAGCCCTGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   195 TCTTATGAATTAGATTTGGTGCTCACTAACGCCCTCATTGTGGACTATACGGGCATTTAC
                                                                                                                                                               1387 GCCAATGCCTCTATCCCCACTCCCCAACCCGTGTATTACCGCGAAATGTTTGGCCACCAT
                                                                                                                                                                                                                                  1507 ATTAAAGAAGAGTTGGCTTGCAAAGAGTGGTTTTGCCAGTTAAAAACTGCCGCAACATC
                                                                                                                                                                                                                                                                                                                                                                                                                                          accaaaaaaaaccrcaaarrcaacaargrraccecacacarcaaagrcaarccrgaaacc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2520 TICGAGGICTITGTAGAIGGCAAACICTGCACCICTAAACCCACCICGCAAGIGCCTCIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAGATTTCACGAAAAGAATATGTTCTATGTATGGTCCCACTACCGGGGATCGTGTTAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTAC
                                                                  1327 GGCATTAAACCCAACATGATCATCAAGGCGGATTCATCGCACTTTCTCAAATGGGCGAT
                                                                                                                                                                                                            GGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGC
                                                                                                                                                                                                                                                                                                    GTGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTCTACCGGTCAAAAACTGCCGTAACATC
                                                                                                                                                                                                                                                                                                                                                                                               ACCAAGAAAGACTTCAAGTTCAACGACAAAACGGCAAAAATCACCGTCGATCCGAAAACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAAATGAAAAAACAAGAATATGTAAATACCTACGGACCCACCAAAGGCGATAAAGTGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 1719;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 31.3%; Score 902.4; DB 8; Best Local Similarity 70.6%; Pred. No. 1.1e-195; Matches 1203; Conservative 0; Mismatches 501;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 10, Application US/10476313
| Publication No. US20040241175A1
| GENERAL INPORMATION:
| APPLICANT: BOYLE, JEFFEREY
| APPLICANT: BOYLE, JEFFEREY
| TITLE OF INVENTION: Artigen Targeting
| TILE OF INVENTION: Artigen Targeting
| TILE PEPERENCE: BDWP-002
| CURRENT APPLICATION NUMBER: US/10/476,313
| CURRENT PILING DATE: 2003-10-24
| PRIOR FILING DATE: 2001-05-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2580 GCCCAGCGCTACACTTTCTTAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCACAACTCTACAACTTGTTCTAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOFTWARE: Patentln version 3.1 SEQ ID NO 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; ORGANISM: Helicobacter felis
US-10-476-313-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQ ID NOS: 12
                                                                                                                                                                                                                                                                                                                                                                                                                                            1567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              75
                                                                                                                                                                                                                                                                                                    2400
                                                                                                                                                                                                                                                                                                                                                                                               2460
                          2220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: DNA
                                                                                                                                                                                                                                                                                                                                      원
                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                 셤
                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                           셤
                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1679
                                                                                                                                       1259
                                                                                                                                                                                                                                                                                                                                                                                                                  CCTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATG 1439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GACTGGGGCACAACACCCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGAT 1619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCACCCCC 1799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCAC 1859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCGGC 1919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCATCGCCGCTGAGGACAAACTCCACGATATGGGGGATTTTCTCTATCACCAGCTCTGAC 1086
                                                                                                                                                                                                                                  GGGGAAGGTATGATTATTACCGCTGGGGGAATCGATTCACACACCCCACTTCCTTTCTCCA 1319
                                                                                                                                                                                                                                                                                                                          CAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGT 1379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCTCCGGATGTCATTAAGATGTCTGGCGAATTTAACATCCTCCCAGCTTCTACCAACCCC 906
AGCCACGAACTCGATCTTGTGCTCACTAACGCCCTGATCGTGGATTACACCGGCATTTAT 246
                                                                                                                                                                                  307 GACATGCAAGATGGCGTTTGCAACAATCTTTGCGTGGGCCCTGCTACTGAGGCTTTGGCC 366
                                                                                                                                                                                                                                                                                                                                                                          486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAAGCTCGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             787 caadecarrecredecedeacrarecaearrrecaeacreareaegrecredecedeced
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATT
                                                                       247 AAAGCCGATATTGGCATTAAAAATGGCAAAATCCATGGCATTGGCAAAGCAGGCAATAAA
                                                                                                                                       GACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGGGGTGTGGGCCACAGAAGCACTAGCA
                                                                                                                                                                                                                                                            487 CCAGCTGATGGGACTAACGCGACTACCATCACTCCGGGGCGCTGGAACCTTAAAACCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1440 TIGCGCGCAGCAGAGAGTATTCTATGAATGTGGGCTTTTTTGGGCAAAGGCAATAGCTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1500 AGCAAAAAACAACTTGTAGAACAAGTAGAAGCGGGCGGATTGGTTTTAAATTGCATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AATGCAATGAACGGGCGCGCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAGCGCTACATCTCCAAATACACTATCAACCCCGCTTTGACCCCACGGCGTGAGCGAGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAGCGCTACATTTCCAAATACACCATCAACCCCGCTATTGCACACTTTCTGAATAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATCGGCTCTGTGGAAGAGGCAAGATCGCCGACTTGGTGGTGGAATCCTGCCTTTTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GTCGCTCTGTAGAAGTGGGCAAATTCGCCGATTTGGTGCTTTGGAGTCCTGCGTTCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           547 CICCGTGCCTCTGAAGAATATGCCATGAACTTGGGCTATTTGGGTAAAGGGAATGTGTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GACTGGGGTAGCACCTGCAGCCATCTACCATTGCTTGAATGTGGCTGACAATACGAT
                                                                                                                                       1200 (
                                                                                                                                                                                                                                  1260
                                                                                                                                                                                                                                                                                                                          1320
                                                                                                                                                                                                                                                                                                                                                                                                                  1380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  727
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1267
                                                                                                                                                                                                                                                                          367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1087
                                             1140
                                                                                                                                                                                                                                                                                                                                                                     427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    907
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1147
```

Op

ò

ò g g ò g

ò

QQ

ò

g

ò

d

ò

셤

δ

ò

원 장

q

B S

q ઠે 셤

ò

ö

Tue

```
US-09-895-913A-251
                                                                                                                                                            1147
                                                                                                                                                                                                                                                                                                                                                         2340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2580
           1860
                               196
                                                                        1027
                                                                                                                   1087
                                                                                                                                        2040
                                                                                                                                                                                  2100
                                                                                                                                                                                                       1207
                                                                                                                                                                                                                                                1267
                                                                                                                                                                                                                                                                     2220
                                                                                                                                                                                                                                                                                         1327
                                                                                                                                                                                                                                                                                                                2280
                                                                                                                                                                                                                                                                                                                                                                              1447
                                                                                                                                                                                                                                                                                                                                                                                                    2400
                                                                                                                                                                                                                                                                                                                                                                                                                                              2460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2520
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1687
                         g
                                                                 셤
                                                                                            ઠે
                                                                                                              셤
                                                                                                                                      8
                                                                                                                                                     a
                                                                                                                                                                                 ò
                                                                                                                                                                                                 В
                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                    원
                                                                                                                                                                                                                                                                                                        ⋧
                                                                                                                                                                                                                                                                                                                               Б
                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                          요
                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                    8
           ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1799
                                                                                                                                                                                           1079
                                                                                                                                                                                                                                       1139
                                                                                                                                                                                                                                                                                1199
                                                                                                                                                                                                                                                                                                                                                                    1319
                                                                                                                                                                                                                                                                                                                                                                                                                1379
                                                                                                                                                                                                                                                                                                                                                                                                                                                       1439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1619
                                                                                                                                                  TTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTATACCACCTATGGCGAAGAA 1019
                                                                                                                                                                                                                                                                                                                          GACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGGGTGTGGGCACAGAAGCACTAGCA 1259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTA 1679
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  846
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   996
                                                                                                                                                                                                                                                                                                                                                                                        426
                                                                                                                              99
                                                                                                                                                               GAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CCTGCTGATGGCACTAATGCGACTACCATCACTCCAGGTAGAAGAAACTTAAAAATGGATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AACGACGCGAGCTTAGCGGATCAAATTGAAGCCGGTGCGATTGGCTTTAAAATCCACGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CTTAAATTTGGCGCGCGTAAAACTATCCGTGAGGGTATGGGTCAGAGCAATAGCCCTGAT
                                                                                                                                                                                                            CITIAAATICGGTGGCGGTAAAACCCTAAGAGAAGGCATGAGCCAATCCAACAACCTAGC
                                                                                                                                                                                                                                                                               AAAGCCGACATTGGGATTTAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAG
                                                                                                                                                                                                                                                                                                     AAAGCGGATATTGGTATTAAAGACGCCAAAATCGCTGGCATTGGTAAAGGCGGTAACAAA
                                                                                                                                                                                                                                                                                                                                                                   GGGGAAGGTATGATTATTACCGCTGGGGAATCGATTCACACACCCCACTTCCTTTCTCCA
                                                                                                                                                                                                                                                                                                                                                                                       CAACAAATCCCTACAGCTTTTGCAAGCGGTGTAACAACCATGATTGGTGGGGGGAACCGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTCAGAGCGGCTGAAGAATATTCTAGAACTTAGGTTTCTTAGCTAAAGGTAACGCTTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGCAAAAAACAACTTGTAGAACAAGTAGAAGCGGGCGCGATTGGTTTTAAATTGCATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GACTGGGGCACAACACCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1680 AATGCAATGAACGGGCGCGCCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GCAGCTATTGCCGGACGCACTATGCACACTTTCCACACTGAAGGCGCTGGTGGCGGGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCACCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACTATICCCTTTCACTGTGAATACAGAAGCCGAACACATGGACATGCTCATGGTGTGTGCCCAC
                                                                                                                                                                                                                                                                                                                                               GACATGCAAGATGGCGTTAAAAACAATCTTAGCGTGGGTCCTGCTACTGAAGCGCTAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                       CCTGTAGATGGCAACGAATGCGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTTGGGCAAAGGCAATAGCTCT
                                                                                                         AAAATGAAAAAACAAGAATATGTAAAATACCTACGGACCCACCAAAGGCGATAAAGTGCGC
                                                                                                                                                                                                                                                          aaagaagaaciiggairiigaicaicaaciaacgciiriaaicgiggairiacaccggrafithar
                                                                                                                                                                                                                                                                                                                                                                                                               CAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGT
                                                                                   Gaps
                                                                                   ö
                                                              Length 1710;
                                                                                   Indels
                                                             30.7%; Score 886.4; DB 7;
70.0%; Pred. No. 5.1e-192;
live 0; Mismatches 511;
          NAME/KEY: misc feature
LOCATION: (B) LOCATION 1...1710
SEQUENCE DESCRIPTION: SEQ ID NO: 3849:
                                                                        Best Local Similarity 70.0
Matches 1193; Conservative
        NAME/KEY:
; FEATURE:
; NAME/F
; LOCATI
; SEQUENCE DE
US-10-335-977-3849
                                                                                                                                                                                           1020
                                                                                                                                                                                                                                      1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   907
                                                                                                                                                                                                                                                          187
                                                                                                                                                                                                                                                                                1140
                                                                                                                                                                                                                                                                                                   247
                                                                                                                                                                                                                                                                                                                          1200
                                                                                                                                                                                                                                                                                                                                                                    1260
                                                                                                                                                                                                                                                                                                                                                                                        367
                                                                                                                                                                                                                                                                                                                                                                                                              1320
                                                                                                                                                                                                                                                                                                                                                                                                                                   427
                                                                                                                                                                                                                                                                                                                                                                                                                                                        1380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     727
                                                                                                         900
                                                                                                                            7
                                                                                                                                                  096
                                                                                                                                                                                                                127
                                                                                                                                                                                                                                                                                                                                              307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             487
                                                                                                                                                                      67
                                                              Query Match
                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                             d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8 8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8 &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         원
장
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     음
상
음
                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                      g
                                                                                                                                                ò
                                                                                                                                                                 g
                                                                                                                                                                                          ò
                                                                                                                                                                                                          g
                                                                                                         ò
```

```
Sequence 251, Application US/09895913A

Sequence 251, Application US/09895913A

Sequence 251, Application US/09895913A

Sequence 251, Application US/0060456A1

GENERAL INFORMATION:
APPLICANT: Al-Garawi, Amal
APPLICANT: Miller, Charles
APPLICANT: Owneh, Jean Franceis
APPLICANT: Owneh, Raymond P.
TITLE OF INVENTION: Encoding No. US20020160456A1el Helicobacter Polypeptides in the
TITLE OF INVENTION: Encoding No. US20020160456A1el Helicobacter Polypeptides in the
FILE REFERENCE: 06132/043002

CURRENT APPLICATION NUMBER: US/09/895,913A

CURRENT APPLICATION NUMBER: US 08/881,227

PRIOR FILING DATE: 1997-06-24

NUMBER OF SEQ ID NOS: 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TACCATGTTCGTGGATGGCAAAGAAGTCACTTCTAAACCAGCTAATAAAGTGAGCTTG 1686
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   <u> actranananagacariccantricantgacactaccicciccacriticanticcantganetre</u>
                                                                                                                                                                                                                                               ACCATTGCGGCTGAAGACACTTTGCATGACATGGGGGATTTTCTCAATCACCAGTTCTGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  rcrcaagcearesercereresereascrrarcacrassescrrescaaacacreaaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1387 GCGAACGCTTCTATCCCTACCCCACAACCGGTTTATTACAGAGAAATGTTCGCTCACCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1507 ATTAAAGAAGAATTAGGGCTTGAAAGACAAGTGTTGCCGGTTAAAAATTGCAGAAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTCGAGGICTTTGTAGATGGCAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTCTA
cáctricgánada a contrada de desercitor de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de contrada de c
                                                                                                                                                                                                                                                                                                                                                                                                                                                               TCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAGCGCTACATCTCCAAATACACTATCAACCCCGCTTTGACCCCACGGCGTGAGTGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2160 ATCGGCTCTGTGGAAGAGGCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         graderrergradaderesecadaseresecrederreserarreresagrecasecarrerr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TCTAACGCGTCTGTGCCCACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GTGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTCTACCGGTCAAAAACTGCCGTAACATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCAAGAAAGACTTCAAGTTCAACGACAAAACGGCAAAAATCACCGTCGATCCGAAAACC
                                                                                                                                                          TCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAAGCTCGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1710
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCCCAGCGCTACACTTTCTTCTAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCTCAACTCTTTAGCATTTTCTAG
```

```
TACCATGITICGIGGATGGCAAAGAAGTAACTICITAAACCAGCCAATAAAGIGAGCTIG 1736
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCGGC
                                                                                                                    <u>artaaagaagaatragggcrrgaaagacaagrcrgcrgcrggraaaaarrgcagaaacarc</u>
                                                                                cacringgaraaaagaraaagaagargringagargaraaagarccaccaa
                                                                                                                                                        TCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAG
                                                                                                                                                                     GCCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGAT
                                                                                                                                                                                                                                                                                                                                                                                                   TCTAACGCGTCTGTGCCCACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCAC
          ACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCAC
                                                                                                      TCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAAGCTCGGAT
                                                                                                                                                                                                      AATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATT
                                                                                                                                                                                                                                                     AAGCGCTACATCTCCAAATACACTATCAACCCCGCTTTGACCCACGGCGTGAGCGAGTAT
                                                                                                                                                                                                                                                                  ATCGGCTCTGTGGAAGAGGGCAAGATCGCCGACTTGGTGGTGGAATCCTGCCTTTTTT
                                                                                                                                                                                                                                                                                                                  GGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GTGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTCTACCGGTCAAAAACTGCCGTAACATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCAAGAAAGACTTCAAGTTCAACGACAAAAAGGGCAAAAATCACCGTCGATCCGAAAAACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 22427, Application US/10282122A
Publication No. US20040029129A1
GENERAL INFORMATION:
APPLICANT: Wang, Liang
APPLICANT: Ameng, Cheryl
APPLICANT: Malone, Cheryl
APPLICANT: Malone, Cheryl
APPLICANT: Ohlsen, Kain
APPLICANT: Zyskind, Judith
APPLICANT: Zyskind, Judith
APPLICANT: Tawick, John
APPLICANT: Tawick, John
APPLICANT: Tawick, John
APPLICANT: Tawick, John
APPLICANT: Tawick, John
APPLICANT: Tawick, John
APPLICANT: Yamamoto, Robert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GCCCAGCGCTACACTTTCTTCTAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ecechactritascatritciaes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 11
US-10-282-122A-22427
                                                                                                                                1077
                                                                                                                                                                                                                                                                                                                                                                                                                           1437
            1800
                                   957
                                                                                                                                                                                1137
                                                                                                                                                                                                        2040
                                                                                                                                                                                                                               1197
                                                                                                                                                                                                                                                       2100
                                                                                                                                                                                                                                                                              1257
                                                                                                                                                                                                                                                                                                     2160
                                                                                                                                                                                                                                                                                                                            1317
                                                                                                                                                                                                                                                                                                                                                     2220
                                                                                                                                                                                                                                                                                                                                                                             1377
                                                                                                                                                                                                                                                                                                                                                                                                    2280
                                                                                                                                                                                                                                                                                                                                                                                                                                                    2340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1497
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2520
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2580
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1737
            8 8
                                                          8 8
                                                                                                  8
                                                                                                                         셤
                                                                                                                                                      ઠે
                                                                                                                                                                       a
                                                                                                                                                                                                     ò
                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                    8 6
                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                   임
                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                               1319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1499
                                                                                                                                             ö
                                                                                                                                                                                                                                                                  CTTAAATTTGGCGCGCGGTAAAACTATCCGTGAGGGTATGGGTCAGAGCAATAGCCCTGAT 1079
                                                                                                                                                                                                                                                                                                                 GAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTAC 1139
                                                                                                                                                                                                                                                                                                                                                                AAAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAG 1199
                                                                                                                                                                                                                                                                                                                                                                                                                 GACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGGGTGTGGGCACAGAAGCACTAGCA 1259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCTCCTGATATTATAAAGTAGCTGGTGAACACAACATTCTTCCCGCTTCCACTAACCCC 956
                                                                                                                                                                                                                                                                                                                                                                                                                                                               TTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTATACCACCTATGGCGAAGAA
                                                                                                                                                                                                                               GTGCAAGTCGCTATCCACACAGACACTTTGAATGAAGCCGGTTGCGTGGAAGAACACTATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAAATGAAAAAACAAGAATATGTAAATACCTACGGACCACCAAAGGCGATAAAGTGCGC
                                                                                                                                                                                                                                                                                 GACATGCAAGATGGCGTTAAAAACAATCTTAGCGTAGGTCCTGCTACTGAAGCTTAGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTTGGGCAAAGGCAATAGCTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AACGACGCGAGCTTAAGCCGATCAAATTGAAGCTGGTGCGATTGGCTTTTAAAATCCACGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GACTGGGGCACAACACCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GACTGGGGCACCACTCCTTCTGCAATCAATCATGCGTTAGATGTTGCAGACAAATACGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CAACAAATCCCTACAGCTTTTGCAAGCGGTGTAACAACCATGATTGGTGGCGGAACTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   crcagacicecrcaacaararricrarcaacrraccrrrcrrccraaaccraaaccrrrcr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                            ö
                                                                                                                     Length 1815;
                                                                                                                                             Indels
                                                                                                                    Score 885.8; DB 3;
Pred. No. 7.2e-192;
0; Mismatches 512;
 for Windows Version 4.0
                                                                                                                   30.7%;
70.0%;
                                   TYPE: DNA ORGANISM: Helicobacter pylori
                                                                                                                                             Matches 1193; Conservative
                                                         ; FEATURE:
; NAME/KEY: CDS
; LOCATION: (51)...(1757)
US-09-895-913A-251
                                                                                                                   Query Match
Best Local Similarity
SOFTWARE: FastSEQ
SEQ ID NO 251
LENGTH: 1815
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   477
                                                                                                                                                                     900
                                                                                                                                                                                                                                                                  1020
                                                                                                                                                                                                                                                                                                                  1080
                                                                                                                                                                                                                                                                                                                                                                 1140
                                                                                                                                                                                                                                                                                                                                                                                                                 1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1680
                                                                                                                                                                                            57
                                                                                                                                                                                                                    960
                                                                                                                                                                                                                                           117
                                                                                                                                                                                                                                                                                          177
                                                                                                                                                                                                                                                                                                                                          237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   597
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    657
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  717
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                897
                                                                                                                                                                                                                                                                                                                                                                                         297
                                                                                                                                                                                                                                                                                                                                                                                                                                        357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  777
                                                                                                                                                                                      a
                                                                                                                                                                                                                  8 8
                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                  요 장
                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   원
장
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8 6 6 6
                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                         ે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
```

1739

1799

```
TCTCAAGCTATGGGTCGTGTGGGTGAAGTTATCACTAGAACTTGGCAAACAGCTGACAAA 1146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1267 GTAĞGTTCTĞTAGAAĞTĞGĞCAAAĞTĞĞÇTĞACTTĞĞTATTĞTĞGAGTCCCĞCATTCTTT 1326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GGCGTAAAACCCAACATGATCATCAAAGGCGGGTTCATTGCGTTGAGTCAAATGGGTGAC 1386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCAC 1859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CACCTAGACAAACGCATCCGCGAGGATTTACAATTTTTCTCAAAGCCGTATCCGCCCCGGC 1919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1027 accarrecegericaagacacrrrecardacaregegarrrreceaareaceaecresec 1086
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AACAAAAAAGAATTTGGCCGCTTGAAAGAAGAAAAGCGCGATAACGACAACTTCAGGATC 1206
           487 CCTGCTGATGGCACTAATGCGACTACTATCACTCCAGGCAGAAGAAATTTAAAATGGATG 546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TCTAACGCGTCTGTGCCCACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ecgaacecricrarcccraccacaaccaerrrarracaeaaaaarerreecreare
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCAAGAAAGACTTCAAGTTCAACGACAAAAACGGCAAAAATCACCGTCGATCCGAAAAACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2400 GTGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTCTACCGGTCAAAAACTGCCGTAACATC
                                                                                                                                                                                                                                                                                                               GTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTA
                                                                                                                                                                                                                                                                                                                                                                                                .680 AATGCAATGAACGGGCGCCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                             787 GCAGCTATTGCCGGACGCACTATGCACACTTTCCACACTGAAGGTGCTGGCGGCGGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         967 CACTTGGATAAAAGCATTAAAGAAGATGTTCAGTTCGCTGATTCAAGGATCCGCCCTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAAGCTCGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAACGCTACTTGTCTAAATACACCATTAACCCAGCGATCGCTCATGGGATTAGCGAGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGCGTAAAACCCCAAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTAAAGAAGAATTAGGGCTTGAAAGACAAGTGTTGCCGGTAAAAATTGCAGAAACATC
                                                                                                                                                                                                                                                                     667 GACTGGGGCACCACTCCTTCTGCAATCAATCATGCGTTAGATGTTGCAGACAAATACGAT
                                                                                                                                                                                                                                                                                                                                                          Grecaagregerarceacacacacacrerreaargaageeggrigegragacacrare
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       140 TCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               847 GCTCCTGATATTATAAGTAGCTGGTGAACACAACATTCTTCCCGCTTCCACTAACCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATCGGCTCTGTGGAAGAGGCCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTT
                                                                                             547 CTCAGAGCGGCTGAAGAATATTCTATGAACTTAGGTTTCTTGGCTAAAGGTAACGCTTCT
                                                                                                                                          AACGACGCGAGCTTAGCCGATCAAATTGAAGCTGGTGCGATTGGCTTTAAAATCCACGAA
                                                                                                                                                                                                                               GACTGGGGCACAACACCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAGCGCTACATCCCAAATACACTATCAACCCCGCTTTGACCCCACGGCGTGAGCTAT
                                                     1440 TTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1087
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1387
                                                                                                                                                                                    607
                                                                                                                                                                                                                             1560
                                                                                                                                                                                                                                                                                                               1620
                                                                                                                                                                                                                                                                                                                                                          727
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      907
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              d
                                                                                                                                                                                                                                                                   d
                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                           셤
                                                                                                                                                                         셤
                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                  ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                     8
                                                                                                                                          ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGGGGTGTGGGGCACAGAAGCACTAGCA 1259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1320 CAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGT 1379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GACATGCAAGATGGCGTTAAAAACAATCTTAGCGTAGGTCCTGCTACTGAAGCCTTAGCC 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CTTAAATTCGGTGGCGGTAAAACCCTGAGAGAGGCATGAGCCAATCCAACAACAACCCTAGC 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Tredecearacacacricarcercaacracacardacracaccarriaredeceaacac 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTATACCACCTATGGCGAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTTAAATTTGGCGCGGGTAAAACTATCCGTGAGGGTATGGGTCAGAGCAATAGCCCTGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   aaagaagaarrigaarcraarcacraaccrrrraarcgraarracaccggrarrar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1140 AAAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAGATTAGCAGAAAAGAATATGTTTCTATGTATGGCCCTACTACAGGCGATAAAGTGAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAAATGAAAAAACAAGAATATGTAAATACCTACGGACCCACCAAAGGCGATAAAGTGCGC
                                                     Essential Genes in Microorganisms
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              See File Wrapper or PALM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 1710;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 884.8; DB 7;
Pred. No. 1.2e-191;
0; Mismatches 512;
APPLICANT: Forsyth, R.
APPLICANT: Xu, H.
TITLE OF INVENTION: Identification of Essential FILE REFERENCE: ELITRA, 034A
CURRENT APPLICATION NUMBER: US/10/282,122A
CURRENT FILING DATE: 2003-02-20
PRIOR PAPLICATION NUMBER: 60/191, 078
PRIOR PELING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR PILING DATE: 2000-05-26
PRIOR APPLICATION NUMBER: 60/203,335
PRIOR PELING DATE: 2000-05-26
PRIOR PELING DATE: 2000-05-26
PRIOR PELING DATE: 2000-05-39
PRIOR PELING DATE: 2000-05-09
PRIOR PELING DATE: 2000-10-23
PRIOR PELING DATE: 2000-10-23
PRIOR PELING DATE: 2000-110-23
PRIOR PELICATION NUMBER: 60/242,578
PRIOR PELING DATE: 2000-110-23
PRIOR PELICATION NUMBER: 60/257,931
PRIOR PELING DATE: 2000-12-22
PRIOR PELING DATE: 2000-12-22
PRIOR PELING DATE: 2000-12-22
PRIOR PELING DATE: 2000-12-22
PRIOR PELING DATE: 2000-12-22
PRIOR PELING DATE: 2000-12-22
PRIOR PELING DATE: 2000-12-22
PRIOR PELING DATE: 2000-12-22
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
PRIOR PELING DATE: 2001-02-09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Remaining Prior Application data removed NUMBER OF SEQ ID NOS: 78614 SOFTWARE: PatentIn version 3.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       30.7%;
70.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity 70.0°
Matches 1192; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-282-122A-22427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQ ID NO 22427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ⋩
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
```

1799

1739

B 6

ò 셤

```
ACTATICCCTATACCATIAATACGGTTGCAGAACACTIAGACATGCTCATGACATGCCAC 1859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCGGC 1919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGCGTGAAACCCAACATGATCATCAAAGGCGGATTCATTGCATTGAGTCAAATGGGTGAT 1386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCGAACGCTTCTATCCCTACCCCACAACCGGTTTATTATAGAGAAATGTTCGCTCATCAT 1446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1507 ATTAAAGAATTAGGGCTTGAAAGCAAGTGTTGCCGGTAAAAATTGCAGAAACATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TACCATGTGTTCGTGGATGGCAAAGAAGTAACTTCTAAACCAGCCAATAAAGTGAGCTTG 1686
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GTGCAAGTCGCTATCCACACACACACTTTGAATGAAGCCGGTTGTGTAGAAGACACTATG
                                                                                                                                                                                                                                                                                                                    1680 AATGCAATGAACGGGGGGGCGCCATCCATGCCTACCACATTGAGGAGGGGGGTGGAGGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                         TCACCTGATGTTATCACCATGGCAGGCGCGAGCTCAATATTCTACCCTCCTCCACCACCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                    TCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAAGCTCGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GGTAAAGCTAAATACGATGCAAACATCACTTTTGTGTCTCAAGGGGGCTTATGACAAAGGC
                                                                                                                                                                                                          GTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTA
                                                                                                                                                                                                                                                                                                                                                                   gcagocarreccegacecrarecacacrrrrccacacreaagececregregeceacac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            actiatriciosocionada cacritica respecta de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de contrata de
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCAAGAAAGACTTCAAGTTCAACGACAAAACGGCAAAAATCACCGTCGATCCGAAAAACC
                                                 AACGATGCAAGCTTAGCCGATCAAATTGAAGCCGGTGCGATTGGCTTTAAAATCCACGAA
                                                                                                     GACTGGGGCACAACACCCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGAT
                                                                                                                                                      GACTGGGGCACCACTCCTGCAATCAATCATGCGTTAGATGTTGCGGACAAATACGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gradericieradaderedecadaderedeciredrereredecaderecedentrir
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2280 TCTAACGCGTCTGTGCCCACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAGCGCTACATCTCCAAATACACTATCAACCCCGCTTTGACCCACGGCGTGAGCGAGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2160 ATCGGCTCTGTGGAAGAGGGCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GGCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGCCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GTGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTCTACCGGTCAAAAACTGCCGTAACATC
                                                                                                                                                                                                                                                                                                                                                                                                                            1740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1027
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1087
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1267
1500
                                                   607
                                                                                                       1560
                                                                                                                                                        667
                                                                                                                                                                                                            1620
                                                                                                                                                                                                                                                                727
                                                                                                                                                                                                                                                                                                                                                                        787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     907
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             967
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2520
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1627
8 6
                                                                                 ે
                                                                                                                                        셤
                                                                                                                                                                                            8
                                                                                                                                                                                                                                                   음 상 음
                                                                                                                                                                                                                                                                                                                                                                                                                 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ⋧
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8 B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                원 장
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Я
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                   1627 TACCATGTGTTCGTGGATGGCAAAGAAGTAACTTCTAAACCAGCCAATAAAGTGAGCTTG 1686
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | TTAGGAGATACCGATCTTTGGGCAGAAGTAGAACTATACCACCTATGGCGAAGAA 1019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAG 1199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTTAAATTTGGCGCGGGTAAAACTATCCGTGAGGGTATGGGTCAGAGCAATAGCCCTGAT 1079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1080 GAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTAC 1139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGGGGTGTGGGCACAGAAGCACTAGCA 1259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GGGGAAGGTATGATTATTACCGCTGGGGGAATCGATTCACACACCCCACTTCCTTTCTCCA 1319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  547 CTCAGAGCGGCAGAAGAATATTCTATGAACTTAAGTTTCTTAGCTAAAGGTAACGCTTCT 606
                                                                                                                                                                                                                                                                                                                                                                                                 producing a recombinant protein using pollen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTTAAATTCGGCGGTGGTAAAACCCTAAGAAGGCATGAGCCAATCTAACAACCCTAGC 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAAGCGGATATTGGTATTAAAGATGGCAAAATCGCTGGCATTGGTAAAGGCGGGTAACAAA 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         307 GACATGCAAGATGGCGTTAAAAACAATCTTAGCGTGGGTCCTGCTACTGAAGCCTTAGCC 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99
TTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAGATTAGCAGAAAAGAATATGTTTCTATGTATGGCCCTACTACAGGCGATAAAGTGAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CCTGCTGATGGCACTAACGCAACCACTATCACTCCAGGTAGAAGAAATTTAAAATGGATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    900 AAAATGAAAAACAAGAATATGTAAATACCTACGGACCCACCAAAGGCGATAAAGTGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAAGAAGAACTGGATCTAATCATCACTAACGCTTTAATCGTGGATTACACCGGTATTTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CCTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1440 TTGCGCGCAGAGAAGAGTATTCTATGAATGTGGGCTTTTTTGGGCAAAGGCAATAGCTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 1710,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         30.5%; Score 880; DB 9; I
69.8%; Pred. No. 1.5e-190;
iive 0; Mismatches 515;
                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: PARK, Hee-Sung
TITLE OF INVENTION: Method for producing a rei
FILE REFERENCE: YLOPO40518US/PCT
CURRENT APPLICATION NUMBER: US/10/500,447A
CURRENT FILING DATE: 2004-06-30
PRIOR PILING DATE: 2001-11-19
NUMBER OF SEQ ID NOS: 6
SOFTWARE: Patentin version 3.2
SOFTWARE: Patentin version 3.2
                                                                                                       2603
                                                                                                                                                        GCGCAACTCTTAGCATTTTCTAG 1710
                                                                                                       GCCCAGCGCTACACTTTCTTCTAG
                                                                                                                                                                                                                                                                                         Sequence 5, Application US/10500447A Publication No. US20050150016A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: DNA
ORGANISM: Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity
Matches 1189; Conserv
                                                                                                                                                                                                                                        RESULT 12
US-10-500-447A-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-10-500-447A-5
                                                                                                                                                      1687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 367
                                                                                                       2580
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             487
  2520
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1380
```

8 셤 ò

음 상 음

ઠે

음 중 음

8 6 8 6

品 名 品 谷

õ g

```
2459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1692
                                                                                                      1679
                                                                                                                                                                                                                                               1799
                                                                                                                                                                                                                                                                                                               1859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCGAACGCTTCTATCCCTCAACCCGTTTATTACAGAGAAATGTTCGCTCATCGT 1452
                                                                                                                                                                                                                                                                                                                                                                                      CACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCGGC 1919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        accarracegericaagacacrrrecareacareeggarrrrercaareacegerrergae 1092
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AACAAGAAAGAATTTGGCCGCTTGAAAGAAGAAAAAGGCGATAACGACACTTCAGGATC 1212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGCGTGAAACCTAACATGATCATCAAGGTGGGTTCATTGCATTAAGCCCAAATGGGCGAT 1392
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATTAAAGAAGAAGAATTAGGACTTGAAAGACAAGTGTTGCCGGTAAAAAATTGCAGAAACATC
                                                                                                                        ACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                          TCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAAGCTCGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GTCGCTTCTGTAGAAGTGGGCAAAGTAGCTGACTTGGTATTGTGGAGTCCAGCATTCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GGTAAAGCTAAATACGATGCAACATCACTTTTGTGTCTCAAGCGGCTTATGACAAAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCAAAAAAGGCAATGCAATTCAACGACACTACCGCTCACATTGAAGTCAATCCTGAAACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAACCCCACCTCGCAAGTGCCTCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TACCATGTGTTCGTGGATGGCAAAGAAGTAACTTCTAAAACCAGCTAATAAAGTGAGCTTG
AACGATGCGAGCTTAGCCGATCAAATTGAAGCCGGTGCGATTGGCTTTAAAATTCACGAA
                                                           673 GACTGGGGCACCACTCCTTCTGCAATCAATGCGTTAGATGTTGCGGACAAATACGAT
                                                                                                      GTGCAAGTTTGTATCCACACACACAGTACAGTCAATGAGGCAGGTTATGTAGATGACACCCTA
                                                                                                                                                                          1680 AATGCAATGAACGGGCGCGCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGGACAC
                                                                                                                                                                                              1740 TCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCACCCCC
                                                                                                                                                                                                                                                                  cacriccaraaaacarraaacarcricacrircccrcarrcaaccarcccrcaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAGCGCTACATCTCCAAATACACTATCAACCCGCTTTGACCCAGGGGTGAGGGGGGGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAACGCTACTTGTCTAAATACACCATTAACCCAGCGATCGCTCATGGGACTAGCGAGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TCTAACGCGTCTGTGCCCCACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCCATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GTGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTCTACCGGTCAAAAACTGCCGTAACATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACCAAGAAAGACTTCAAGTTCAACGACAAAACGGCAAAAATCACCGTCGATCCGAAAACC
                                     GACTGGGGCACAACACCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATCGGCTCTGTGGAAGAGGCCAAGATCGCCGACTTGGTGGTGGTGGAATCCTGCCTTTTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GGCAAGGCGAAATTTGACACCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCCCAGCGCTACACTTTCTTCTAG 2603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCGCAACTCTTTAGCATTTTCTAG
 613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1693
                                     1560
                                                                                                      1620
                                                                                                                                                                                                                                                                                 853
                                                                                                                                                                                                                                                                                                                 1800
                                                                                                                                                                                                                                                                                                                                                   913
                                                                                                                                                                                                                                                                                                                                                                                      1860
                                                                                                                                                                                                                                                                                                                                                                                                                        973
                                                                                                                                                                                                                                                                                                                                                                                                                                                        1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1033
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1093
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1153
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1573
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2520
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2580
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                           원
                                                                                           ठे
                                                                                                                                 g
                                                                                                                                                                          8
                                                                                                                                                                                                           В
                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                         ద
                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                 요
                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ठे
                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AGCAAAAAACAACTIGTAGAACAAGTAGAAGCGGGCGGATTGGTTTTAAATTGCATGAA 1559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CCTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCCAAATGGAACTTGCACCGCATG 1439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1440 TIGCGCCCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTGGGCAAAGGCAATAGCTCT 1499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTATACCACCTATGGCGAAGAA 1019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1080 GAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTAC 1139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAG 1199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGGGTGTGGGGCACAGAAGCACTAGCA 1259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GGGGAAGGTATGATTATTACCGCTGGGGGAATCGATTCACACACCCACTTCCTTTCTCCA 1319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGT 1379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              73 TTGGGCGATACAGACTTGATCGCTGAAGTAGAACATGACTACACCATTTATGGCGAAGAG 132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CTTAAATTCGGTGGCGGTAAAACCCTAAGAAGGCATGAGCCAATCTAACAACCCTAGC 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        193 AAAGAAGAACTGGATCTAATCATCACTAACGCTTTAATCGTGGATTACACCGGTATTTAT 252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GACATGCAAGATGGCGTTAAAAACAATCTTAGCGTGGGTCCTGCTACTGAAGCCTTAGCC 372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CAACAAATCCCTACAGCGTTTTTGCAAGCGGTGTAACAACCATGATTGGTGGCGGAACTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CCTGCTGATGGCACTAACGCGACTACTATCACTCCAGGTAGAAGAAATTTAAAATGGATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             aagarragcagaaaagaarargrrrcrargrargccccracracaggrgaraagrgaga
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTTAAATTTTGGCGCGGGTAAAACTATCCGTGAGGGTATGGGTCAGAGCAATAGCCCTGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             900 AAAATGAAAAAAAAAATATGTAAATACCTACGGACCCAACAAAGGCGATAAAGTGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTCAGAGCGGCTGAAGAATATCTAAGATTTAGGTTTCTTGGCTAAAGGTAACGCTTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 1717;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 876.8; DB 8;
Pred. No. 8.1e-190;
0; Mismatches 517;
                                                                                                               Sequence 11, Application US/10476313
Publication No. US200402411751
GENERAL INFORMATION:
APPLICANT: MCKENZIE, BRENT
APPLICANT: LEW, ANDREW
APPLICANT: LEW, ANDREW
TILE REFERENCE: BOWP-002
CURRENT APPLICATION NUMBER: US/10/476,313
CURRENT APPLICATION NUMBER: US/10/476,313
FRIOR APPLICATION NUMBER: PR5241
PRIOR APPLICATION NUMBER: PR5241
PRIOR APPLICATION NUMBER: PR5241
PRIOR PILING DATE: 2001-05-25
NUMBER OF SEQ ID NOS: 12
SOFTWARE: Patentln version 3.1
 GCCCAGCGCTACACTTTCTTCTAG 2603
                                  GCACAACTCTTAGCATTTTCTAG 1710
                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: DNA
ORGANISM: Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity 69.7%;
Matches 1187; Conservative
                                                                                    RESULT 13
US-10-476-313-11
                                                                                                                                                                                                                                                                                                                                                                                                                          ; ORGANISM: HeJ
US-10-476-313-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            493
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1500
 2580
                                                                                                                                                                                                                                                                                                                                                                  SEQ ID NO 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
8
                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠ
```

```
1740 TCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCACCCC 1799
                                                                                                                                                                                                                                                                                                                                                                                                                           ACTATTCCCTATACCATTACGGTTGCAGAACACTTAGACATGCTCATGACATGCCAC 1859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CACCTAGACAAACGCATCCGCGAGGATTTTACAATTTTCTCAAAGCCGTATCCGCCCCGGC 1919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAACGCTACTTGTCTAAATACACCATTAACCCAGCGATCGCTCATGGGATTAGCGAGTAT 1266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGTGTGAAACCCAACATGATCATCAAAGCCGGTTCATCGCATTGAGTCAAATGGGTGAT 1386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GIGCAAGITIGIAICCACACCGAIACAGICAAIGAGGCAGGITAIGIAGAIGACACCCIA 1679
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AATAAAAAGAATTTGGCCGCTTGAAAGAAGAAAAGCGGATAACGACAACTTCAGGATC 1206
                                                                                                                                                                                                                                                                                                                                                                                                                                                            996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGCAAAAAACAACTTGTAGAACAAGTAGAAGCGGGCGCGATTGGTTTTAAATTGCATGAA
                                                                                                                                                                                                                                                                                  1680 AATGCAATGAACGGGCGCGCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                             cactriccaraaaaccarraaacaarcriccacriccicarrcaaccarricccccaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCAAGAAAGACTTCAAGTTCAACGACAAAAACGGCAAAAATCACCGTCGATCCGAAAAACC
                                                                                                                                        GACTGGGGCACAACACCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TCTATCGCGCCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAAGCTCGGAT
                     CTCAGAGCGGCTGAAGAATATTCTATGAACTTTGGTTTCTTGGCTAAAGGTAACGCTTCT
                                                                                            AAGCGCTACATCTCCAAATACACTATCAACCCGGCTTTGACCCACGGCGTGAGCGAGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TCTAACGCGTCTGTGCCCACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GTGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTCTACCGGTCAAAAACTGCCGTAACATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1507 ATTAAAGAAGAATTAGGGCTTGAAAGACAAGTGTTGCCGGTAAAAATTTGCAGAAATATC
TTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTTGGGCAAAGGCAATAGCTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATCGGCTCTGTGGAAGAGGCCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGCGTAAAACCCCAAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGC
                                                                                                                                                                                                                                                                                                                                                                                        847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1207
                                  547
                                                                                                       607
                                                                                                                                          1560
                                                                                                                                                                            667
                                                                                                                                                                                                               1620
                                                                                                                                                                                                                                                                                                                     787
                                                                                                                                                                                                                                                                                                                                                                                                                               1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                               907
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1027
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1087
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1567
 8 6 6 6
                                                                                                                                   8 6
                                                                                                                                                                                                  8
                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                 8 8
                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                   용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8 & 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             જે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                APPLICANT: Nim, Byung-O
APPLICANT: Kim, Byung-O
APPLICANT: Kim, Byung-O
APPLICANT: Kim, Byung-O
APPLICANT: Kim, Byung-O
APPLICANT: Shin, Sung-Seup
APPLICANT: Fark, Myung-Hwan
APPLICANT: Tu, Young-Hwan
APPLICANT: Choi, Deok-Joon
APPLICANT: Ung, Hyung-Jin
APPLICANT: Ung, Hyung-Jin
APPLICANT: Ung, Hyung-Jin
APPLICANT: Ung, Hyung-Jin
APPLICANT: Ung, Hyung-Jin
APPLICANT: Ung, Hyung-Jin
APPLICANT: NUMBER: NS/09/402,100
CURRENT APPLICATION NUMBER: KR 97-11950
EARLIER APPLICATION NUMBER: KR 97-11950
EARLIER APPLICATION NUMBER: KR 97-11951
EARLIER APPLICATION NUMBER: KR 97-11951
EARLIER APPLICATION NUMBER: KR 97-11951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTATACCACCTATGGCGAAGAA 1019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1020 CTTAAATTTGGCGCGGGTAAAGTATCCGTGAGGGTATGGGTCAGAGCAATAGCCCTGAT 1079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               187 AAAGAAGAACTGGATCTAATCATCACTAACGCTTTAATCGTGGATTACACCGGTATTTAT 246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   427 CAACAAATCCCTACAGCTTTTGCAAGCGGTGTAACAACCATGATGGTGGGGGAACTGGC 486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    247 AAAGCGGATATTGGTATTAAAGATGGCAAAATCGCTGGCGGTAAAGGCGGTAAAGA 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   67 Treseccaracagaerrearescreaagragaacargacracaccarrrargergaagag 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        127 crraharricgicgicgicaraharccrrangagaagcargagcarcrahacaaccrage 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GACACGCAAGATGGCGTTAAAAACAATCTTAGCGTGGGTCCTGCTACTGAAGCCTTAGCC 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CCTGCTGATGGCACTAACGCAACCACTATCACTCCAGGTAGAAGAAATTTAAAATTCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1080 GAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGGGGTGTGGGCCACAGAAGCACTAGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGGGAAGGTATGATTATTACCGCTGGGGGAATCGATTCACACACCCCACTTCCTTTCTCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CCTGTAGATGGCACGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               900 AAAATGAAAAACAAGAATATGTAAATACCTACGACCCACCAAAGGCGATAAAGTGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAGATTAGCAGAAAAGAATATGCTTCTATGTATGGCCCTACTACAGGCGATAAAGTGAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 2385;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 855.6; DB 3;
Pred. No. 6.8e-185;
0; Mismatches 504;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DNA
                                                  Sequence 1, Application US/09402100
Patent No. US20010019834A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; NAME/KEY: misc_feature
; LOCATION: ()..()
; CTHER INFORMATION: Recombinant
US-09-402-100-1
                                                                                                                                                                                                                                                                                                                                                                                          SOFTWARE: PatentIn version 3.0 SEQ ID NO 1
                                                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: DNA
ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
29.7%;
Best Local Similarity 69.8%;
Matches 1169; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                           LENGTH: 2385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     487
```

δ 셤 8 엄 8 g 8 g Š Б ò g

상 음

ò 셤 Š a

셤 ò

```
1463
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    959 GATATTGTCATTGGCCCCGGAACAGAAGTTGTCGCGGGGAAGAAGGTAAAATAGTCACTGCT 1018
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GGGGGAATCGATTCACACACCCACTTCCTTTCTCCACAACAATTCCCCTACCGCTCTAGCC 1343
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCT 1223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             983
                                                                                                                             563
                                                                                                                                                                    357
                                                                                                                                                                                                              623
                                                                                                                                                                                                                                                        417
                                                                                                                                                                                                                                                                                                  683
                                                                                                                                                                                                                                                                                                                                         477
                                                                                                                                                                                                                                                                                                                                                                                   743
                                                                                                                                                                                                                                                                                                                                                                                                                             537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      744 GACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAGTGATTGGCATGA 803
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      665 GATATGTTTGGCCCAACAACAGGCGATCGTTTGCGATTAGCAGATACCGAGCTGTTTCTT 724
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Accaargccarrarragarrarraggcarraraaagcagararraggcarraaagar 904
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGCCGTATTCTCGGTATTGGCAAGGCAGGTAATCCAGATGTTCAGCCCAATGT----G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             924 AATACCTACGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACTAACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGGATTAAAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1344 AATGGCGTTACAACCATGTTTGGAGGCGGCACAGGTCCTGTAGATGGCACGAATGCGACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACTATCACTCCGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTATTCT
179 GACGTACTGTTTTAACCGCAGAGCAAGTAATGGAAGGGGTGCCAGAGATGATAAAAGATG
                                                                                     299 TGT-AGGIAATAACAIGATCCCCGGIGAAATTAGAGITAAIGCAGCATTAGGCGATAITG
                                                                                                                                                                                                                AGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAGGGCCTAAATCCT
                                                                                                                                                                                                                                                        358 AACTGAATGCTGGTCGCGAGACAAAAACCATACAGGTGGCTAATCATGGCGATAGACCTG
                                                                                                                                                                                                                                                                                               624 TGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCACTAAAATTCGATCGTG
                                                                                                                                                                                                                                                                                                                                         418 racaagicggcrcrcarraccacrirrargaagrraargaggcacrcaggrraggag
                                                                                                                                                                                                                                                                                                                                                                                     684 AAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATTGGGGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                          478 AAGAGACATTAGGTTTTAAATATTCCTGCTGGTATGGCTGTGCGCTTCGAGCCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   605 AGTGATGGGTAAATTGGAGAGAGAAAAATGAAAACTATCTCACGTCAAGCTTATGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GAAGTAGAACATGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGCGGGTAAAACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            725 GAAATTGAAAAGATTTCACCACTTATGGCGAAGAGGTCAAATTTGGTGGTGGTAAAGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATCCGTGAGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Arrocrearecandeccanaccanerrerrangementererrerrerrerrerrerrerre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CATATGGTCGTGGGTGTGGGCACAGAAGCACTAGCAGGGGAAGGTATGATTACCGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          <u> acagitracciccegirattriogaatraigraccecateriragagecegeregateaartracci</u>
                                                                                                                             507 AACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTTGGTTGCGATAAA---GACATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       538 GTCAAAGCCGCACTGTTGAGTTAGTGGCTTTTGCAGGAAAACGTGAAATTTATGG-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        804 ACGGGCTTGTGAATAACATCGCGGATGAACGCCATAAACATAAAGCGCTTGACAAGGCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -----TTTTCATGCCAA
                                           TAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTGTGAATTGGCCCATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   845
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1044
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             785
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  905
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1464
                                                                                                                                                                                                                564
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  984
                                           447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    593
                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                   유
                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             요
                                                                                 셤
                                                                                                                                                              유
                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                         8
                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Transcr, John
APPLICANT: Carr, Grant
APPLICANT: Carr, Grant
APPLICANT: Vamamoto, Robert
APPLICANT: Vanamoto, Robert
APPLICANT: Vanamoto, Robert
APPLICANT: Vanamoto, Robert
APPLICANT: Xu, H.
TITLE OF INVENTION: Identification of Essential Genes in Microorganisms
FILE REPERENCE: ELITRA.034
CURRENT APPLICATION NUMBER: 60/191,078
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR APPLICATION NUMBER: 60/206,989
PRIOR FILING DATE: 2000-05-26
PRIOR PILING DATE: 2000-05-26
PRIOR PILING DATE: 2000-09-66
PRIOR PILING DATE: 2000-09-66
PRIOR APPLICATION NUMBER: 60/230,337
PRIOR PILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-23
PRIOR FILING DATE: 2000-11-23
PRIOR PILING DATE: 2000-12-22
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR PILING DATE: 2000-12-22
PRIOR PILING DATE: 2000-12-22
PRIOR PILING DATE: 2001-10-39
PRIOR PILING DATE: 2001-10-39
PRIOR PILING DATE: 2001-10-39
PRIOR PILING DATE: 2001-10-39
PRIOR PILING DATE: 2001-10-39
PRIOR PILING DATE: 2001-10-39
PRIOR PILING DATE: 2001-10-39
PRIOR PILING DATE: 2001-10-39
PRIOR PILING DATE: 2001-10-39
PRIOR PILING DATE: 2001-10-39
PRIOR PILING DATE: 2001-10-39
PRIOR PILING DATE: 2001-10-39
PRIOR PILING DATE: 2001-10-39
PRIOR PILING DATE: 2001-10-39
PRIOR PILING DATE: 2001-10-39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      327 CCCATATTATGGACGAAGGGGGCGGTGGAAAAAAAACCGTTGCCCAGCTTATGGAAGAGT 386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       207 IGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATTATGCGGGGGAAGTGGCTA 266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       267 GAAAGCGCAAAGCAGAGGGCTTAAAGCTCAACCAACCGGAAGCCATTGCTTACATTAGTG 326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                           1679
  TICGAGGICITIGIAGAIGGCAAACICIGCACCICIAAACCCACCICGCAAGIG 2573
                          99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 2341;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Remaining Prior Application data removed - See File Wrapper or NUMBER OF SEQ ID NOS: 78614
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 734.6; DB 7;
Pred. No. 3.4e-157;
0; Mismatches 929;
                                                                                                                                                 Sequence 32950, Application US/10282122A Publication No. US20040029129A1
                                                                                                                                                                                                              APPLICANT: Wang, Liangsu
APPLICANT: Zamudio, Carlos
APPLICANT: Malone, Cheryl
APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Kari
APPLICANT: Zyskind, Judith
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                25.5%;
58.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE: Patentin version 3.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Proteus mirabilis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity 58.6
Matches 1408; Conservative
                                                                                                                                                                                                                                                                                                                                         Wall, Daniel
Trawick, John
                                                                                                                                                                                      GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-10-282-122A-32950
                                                                                                       RESULT 15
US-10-282-122A-32950
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ ID NO 32950
LENGTH: 2341
  2520
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: DNA ORGANISM:
                                           1627
                                                                                                                                                                                                                                                                                                                                         APPLICANT: APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
```

ò

```
Search co
Job time
                         셤
ò
                2423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gredaceaccarcircanargingargercretarcarcarccarccretatrecreaa 1618
                                                                                                                                                                                                                                                                                                                                                                                                                                                             2184 ATGGCGACTTGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATC 2243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACAGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATGAACGGGCGCGCCATC 1703
                                                                                                                                                                                                                                                                                                                                                                        GTTGCAGAACACTTAGACATGCTCATGACATGCCACCACCACGTAGACAACGCATCCGCGAG 1883
                                                                                                                                                                                                                                                                                                                                                                                                                                         GATTTACAATTTTCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTC 1943
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CATGATATGGGGGCAATTTCGGTGATGTCGTCAGACTCACAAGCCATGGGACGAGGTCGGA 1738
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CCTGAAGATGCCAAAGATAACGATAATTTCCGCATTAAGCCCTACATCCCAAATACACT 2123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CAACCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGC 2363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2424 CGCCAAGTTCTACCGGTCAAAAACTGCCGTAACATCACCAAGAAAAAGACTTCAAGTTCAAC 2483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2159 adcrnaaringercencingaggecingregicararicacaaaagcrncgargarccacaar 2218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AACTATGTTCCTCATATCGAATTAGATCCACAAACTTACATTGTTAAAGCGGGATGGTGTA 2278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTCTGCACCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTGTAG 2603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CATGCCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCA
                                                                                                                                                                                                                                                                                                 GGCGAGCTCAATATTCTACCCTCCTCCACCCCCCACTATTCCCTATACCATTAATACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ATCAACCCCGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCCACTCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ATCACTITITGITTCCAAAGTCGCCTATGAAAATGGCGTGAAAGAAAAAAGCTGGGCTTAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GACAAAACGGCAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAA
                                                                                      ATCGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACAGAT
                                                                                                                                                           1644
                                                                                                                                                                                                                              1704
                                                                                                                                                                                                                                                                                                   1764
                                                                                                                                                                                                                                                                                                                                                                                                          1559
                                                                                                                                                                                                                                                                                                                                                                                                                                            1884
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1944
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1679
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2064
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2544
```

6 6 6 6

8 4 4 4 4 8

ò

Db 2339 CCA 2341 Search completed: November 29, 2005, 08:04:19 Job time : 2060 secs

```
1121, App
115, App
4389, Ap
4389, Ap
4109, Ap
2361, Ap
4033, Ap
4033, Ap
3731, Ap
3731, Ap
3731, Ap
4229, Ap
4229, Ap
4229, Ap
4220, Ap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 3828, Ap
Sequence 3853, Ap
Sequence 117, App
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      26, Appl
                                                                                                                                                       November 29, 2005, 00:34:45; Search time 563 Seconds (without alignments) 760.989 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4032,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4033,
                                                                                                                                                                                                                                                                                                                  2883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                                                        1 rggragattttccarcactt.....aaaaaagtagaagccacagg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            / cgn2 6/ptodata/2/pubpna/US06_NEW_PUB.seq:*
/ cgn2 6/ptodata/2/pubpna/US06_NEW_PUB.seq:*
/ cgn2 6/ptodata/2/pubpna/US06_NEW_PUB.seq:*
/ cgn2 6/ptodata/2/pubpna/US08_NEW_PUB.seq:*
/ cgn2 6/ptodata/2/pubpna/US08_NEW_PUB.seq:*
/ cgn2 6/ptodata/2/pubpna/PCT_NEW_PUB.seq:*
/ cgn2 6/ptodata/2/pubpna/US01_NEW_PUB.seq:*
/ cgn2 6/ptodata/2/pubpna/US11_NEW_PUB.seq:*
/ cgn2 6/ptodata/2/pubpna/US11_NEW_PUB.seq:*
/ cgn2 6/ptodata/2/pubpna/US11_NEW_PUB.seq:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /cgn2 6/ptodata/2/pubpna/US60 NEW PUB.seq:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     6410526
GenCore version 5.1.6
(c) 1993 - 2005 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-10-793-626-3828

US-10-793-626-3853

US-10-793-626-117

US-10-793-626-4032

US-10-793-626-4032

US-10-793-626-121

US-10-793-626-115

US-10-793-626-115

US-10-793-626-4038

US-10-793-626-4038

US-10-793-626-4033

US-10-793-626-4033

US-10-793-626-4031

US-10-793-626-4031

US-10-793-626-4031

US-10-793-626-4031

US-10-793-626-4031

US-10-793-626-4031

US-10-793-626-3761

US-10-793-626-3761

US-10-793-626-3761

US-10-793-626-3761

US-10-793-626-3761

US-10-793-626-3761

US-10-793-626-3761

US-10-793-626-3761

US-10-793-626-3761

US-10-793-626-3761
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Published Applications NA New:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                  3205263 segs, 74304013 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                         using sw model
                                                                                                                                                                                                                                                                                                                                                                        IDENTITY_NUC
Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                 US-09-904-994B-1
2883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        - nucleic search,
                           Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Post-processing:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         612
578.6
455
424.4
216.2
97.4
                                                                                                                                                                                                                                                                                               Perfect score:
                                                                                                                                                                                                                                                                                                                                                                           Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score
                                                                                                         OM nucleic
                                                                                                                                                                                                                                                                                                                          Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Database
                                                                                                                                                                60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Result
No.
                                                                                                                                                             Run
```

C 25 35.6 1.2 1500 1 US-10-485-517-56 Sequence C 26 35.6 1.2 3189 1 US-10-793-626-3694 Sequence C 27 35.6 1.2 3189 1 US-10-793-626-3694 Sequence C 27 35.6 1.2 3283 1 US-10-793-626-4141 Sequence C 31 35.6 1.2 34000 7 US-10-793-626-319 Sequence C 31 35.2 1.2 4248 1 US-10-793-626-319 Sequence C 31 35.2 1.2 4248 1 US-10-793-626-319 Sequence C 34 34.4 1.2 1274 1 US-10-793-626-3143 Sequence C 34 34.4 1.2 1274 1 US-10-793-626-3143 Sequence C 34 34.4 1.2 1274 1 US-10-793-626-3104 Sequence C 37 34.4 1.2 3073 1 US-10-793-626-3104 Sequence C 37 34.4 1.2 3073 1 US-10-793-626-3104 Sequence C 37 34.4 1.2 3139 1 US-10-793-626-3104 Sequence C 37 34.4 1.2 3139 1 US-10-793-626-3104 Sequence C 37 34.4 1.2 3139 1 US-10-793-626-3104 Sequence C 44 34.4 1.2 3139 1 US-10-793-626-3107 Sequence C 44 34.4 1.2 3645 1 US-10-793-626-3107 Sequence C 44 34.2 1.2 3473 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 3473 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 3473 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 3473 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 3473 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 3473 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 3473 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 3473 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 3473 1 US-10-793-626-3457 Sequence C 45 34.2 1.2 3473 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 3473 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 3473 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 3473 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 34.3 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 34.3 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 34.3 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 34.3 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 34.3 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 34.3 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 34.3 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 34.3 1 US-10-793-626-3437 Sequence C 45 34.2 1.2 34.3 1 US-10-793-626-3437 Sequence C 45 34.3 1 US-10-793-626-3437 Sequence C 45 34.3 1 US-10-793-626-3437 Sequence C 45 34.3 1 US-10-793-626-3437 Sequence C 45 34.3 1 US-10-7	25 35.6 1.2 1500 1 US- 26 35.6 1.2 3189 1 US- 28 35.6 1.2 3189 1 US- 30 35.4 1.2 34000 7 US- 31 35.2 1.2 3400 1 US- 32 34.4 1.2 1274 1 US- 34 34.4 1.2 1299 1 US- 36 34.4 1.2 1274 1 US- 37 34.4 1.2 1274 1 US- 38 34.4 1.2 3073 1 US- 39 34.4 1.2 3073 1 US- 40 34.4 1.2 3536 1 US- 41 34.4 1.2 3536 1 US- 42 34.4 1.2 3536 1 US- 43 34.4 1.2 3536 1 US- 44 34.2 1.2 3536 1 US- 45 34.4 1.2 3645 1 US- 46 34.4 1.2 3645 1 US- 47 34.4 1.2 3536 1 US- 48 34.2 1.2 3536 1 US- 48 34.2 1.2 3546 1 US- 49 34.2 1.2 3546 1 US- 45 34.2 1.2 3546 1 US- 46 34.2 1.2 3546 1 US-	Sequence Sequence
1.2 3189 1 US-10-793-626-3694 Sequence 323 3 US-10-793-626-422 Sequence 1.2 3253 1 US-10-793-626-422 Sequence 1.2 340000 7 US-10-793-626-319 Sequence 1.2 34000 7 US-10-793-626-3919 Sequence 1.2 2308 1 US-10-793-626-3919 Sequence 1.2 2308 1 US-10-793-626-398 Sequence 1.2 3473 1 US-10-793-626-343 Sequence 1.2 1274 1 US-10-793-626-396 Sequence 1.2 1274 1 US-10-793-626-396 Sequence 1.2 3037 1 US-10-793-626-396 Sequence 1.2 3037 1 US-10-793-626-396 Sequence 1.2 3536 1 US-10-793-626-3957 Sequence 1.2 3645 1 US-10-793-626-3420 Sequence 1.2 3854 1 US-10-793-626-3420 Sequence 1.2 3854 1 US-10-793-626-3420 Sequence 1.2 3854 1 US-10-793-626-3420 Sequence 1.2 3473 1 US-10-793-626-3420 Sequence 1.2 3473 1 US-10-793-626-3457 Sequence 1.2 3546 1 US-10-793-626-3457	26 35.6 1.2 3189 1 US- 27 35.6 1.2 3283 1 US- 29 35.6 1.2 3282 1 US- 29 35.6 1.2 3282 1 US- 31 35.4 1.2 3282 1 US- 33 34.4 1.2 1299 1 US- 36 34.4 1.2 1299 1 US- 37 34.4 1.2 1299 1 US- 38 34.4 1.2 1299 1 US- 39 34.4 1.2 3837 1 US- 39 34.4 1.2 3837 1 US- 39 34.4 1.2 3838 1 US- 40 34.4 1.2 3838 1 US- 41 34.4 1.2 3838 1 US- 42 34.4 1.2 3838 1 US- 43 34.4 1.2 3838 1 US- 44 34.2 1.2 3838 1 US- 45 34.4 1.2 3838 1 US- 46 34.2 1.2 3838 1 US- 47 34.4 1.2 3848 1 US- 48 34.2 1.2 3848 1 US- 48 34.2 1.2 3848 1 US- 48 34.2 1.2 3848 1 US- 48 34.2 1.2 3848 1 US-	Sequence 365 Sequence 412 Sequence 31 Sequence 31 Sequence 31 Sequence 31 Sequence 31 Sequence 31 Sequence 31 Sequence 31 Sequence 31 Sequence 31 Sequence 31 Sequence 31 Sequence 31 Sequence 31 Sequence 32 Sequence 32 Sequence 32 Sequence 32 Sequence 33 Sequence 32 Sequence 32 Sequence 33 Sequence 34 Sequence 34 Sequence 34 Sequence 34
1.2 3223 1 US-10-793-626-4141 Sequence 1.2 34000 7 US-11-102-978-3 Sequence 1.2 34000 7 US-11-102-978-3 Sequence 1.2 34000 7 US-11-102-978-3 Sequence 1.2 4248 1 US-10-793-626-3919 Sequence 1.2 2308 1 US-10-793-626-3885 Sequence 1.2 2308 1 US-10-510-386-61 Sequence 1.2 1274 1 US-10-927-641-34 Sequence 1.2 1274 1 US-10-927-641-34 Sequence 1.2 3037 1 US-10-793-626-3904 Sequence 1.2 3037 1 US-10-793-626-3904 Sequence 1.2 3518 1 US-10-793-626-4110 Sequence 1.2 3518 1 US-10-793-626-4110 Sequence 1.2 3645 1 US-10-793-626-4110 Sequence 1.2 3864 1 US-10-793-626-3420 Sequence 1.2 3873 1 US-10-793-626-3420 Sequence 1.2 3473 1 US-10-793-626-3420 Sequence 1.2 3473 1 US-10-793-626-3420 Sequence 1.2 3473 1 US-10-793-626-3420 Sequence 1.2 3473 1 US-10-793-626-3457 Sequence 1.2 3473 1 US-10-793-626-3457 Sequence 1.2 3546 1 US-10-793-626-3454 Sequence 1.2 3546 1 US-10-793-626-3454	27 35.6 1.2 3223 1 US- 28 35.6 1.2 34282 1 US- 29 35.6 1.2 340000 7 US- 31 35.2 1.2 4248 1 US- 33 34.6 1.2 3473 1 US- 34 34.4 1.2 1274 1 US- 36 34.4 1.2 1274 1 US- 37 34.4 1.2 3377 1 US- 38 34.4 1.2 3377 1 US- 39 34.4 1.2 3377 1 US- 40 34.4 1.2 3536 1 US- 41 34.4 1.2 3536 1 US- 42 34.4 1.2 3536 1 US- 43 34.4 1.2 3536 1 US- 44 34.2 1.2 3473 1 US- 45 34.4 1.2 3536 1 US- 46 34.4 1.2 3536 1 US- 47 34.4 1.2 3536 1 US- 48 34.2 1.2 3937 1 US- 48 34.2 1.2 3937 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US-	Sequence 412 Sequence 313 Sequence 313 Sequence 313 Sequence 313 Sequence 314 Sequence 314 Sequence 316 Sequence 317 Sequence 316 Sequence 317 Sequence 316 Sequence 317 Sequence 317 Sequence 317 Sequence 317 Sequence 317 Sequence 317 Sequence 317 Sequence 317 Sequence 317 Sequence 317 Sequence 317 Sequence 317 Sequence 317 Sequence 317
1.2 3385 1 US-10-793-626-4141 Sequence 1.2 340000 7 US-11-102-978-3 Sequence 1.2 4248 1 US-10-793-626-3919 Sequence 1.2 4248 1 US-10-793-626-3919 Sequence 1.2 2308 1 US-10-510-386-61 Sequence 1.2 2308 1 US-10-793-626-343 Sequence 1.2 1274 1 US-10-793-626-373 Sequence 1.2 1274 1 US-10-793-626-379 Sequence 1.2 3073 1 US-10-793-626-3904 Sequence 1.2 3179 1 US-10-793-626-3904 Sequence 1.2 3179 1 US-10-793-626-3904 Sequence 1.2 3181 1 US-10-793-626-3904 Sequence 1.2 3645 1 US-10-793-626-3410 Sequence 1.2 3845 1 US-10-793-626-3420 Sequence 1.2 3845 1 US-10-793-626-3420 Sequence 1.2 3473 1 US-10-793-626-3434 Sequence 1.2 3473 1 US-10-793-626-3437 Sequence 1.2 3473 1 US-10-793-626-3437 Sequence 1.2 3473 1 US-10-793-626-3453 Sequence 1.2 3453 1 US-10-793-626-3453 Sequence 1.2 3453 1 US-10-793-626-3453 Sequence 1.2 3453 1 US-10-793-626-3453 Sequence 1.2 3453 1 US-10-793-626-3453 Sequence 1.2 3453 1 US-10-793-626-3453 Sequence 1.2 3453 1 US-10-793-626-3453 Sequence 1.2 3453 1 US-10-793-626-3453 Sequence 1.2 3453 1 US-10-793-626	28 35.6 1.2 3285 1 US- 30 35.4 1.2 34000 7 US- 31 35.2 1.2 4248 1 US- 32 34.4 1.2 1274 1 US- 34 34.4 1.2 1274 1 US- 37 34.4 1.2 1274 1 US- 38 34.4 1.2 1274 1 US- 37 34.4 1.2 3037 1 US- 38 34.4 1.2 3037 1 US- 38 34.4 1.2 3037 1 US- 39 34.4 1.2 3037 1 US- 40 34.4 1.2 3119 1 US- 41 34.4 1.2 3556 1 US- 42 34.4 1.2 3556 1 US- 43 34.4 1.2 3556 1 US- 44 34.2 1.2 3556 1 US- 45 34.2 1.2 3854 1 US- 46 34.2 1.2 3854 1 US- 47 34.2 1.2 3854 1 US- 48 34.2 1.2 3854 1 US- 48 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US-	Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence
1.2 340000 7 US-11-102-978-3 Sequence 3609 1 US-107-93-626-3919 Sequence 1.2 24080 1 US-10-793-626-3919 Sequence 1.2 2438 1 US-10-793-626-3985 Sequence 1.2 2438 1 US-10-793-626-3343 Sequence 1.2 2474 1 US-10-793-626-344 Sequence 1.2 1294 1 US-10-793-626-3904 Sequence 1.2 3037 1 US-10-793-626-3904 Sequence 1.2 3037 1 US-10-793-626-3906 Sequence 1.2 3536 1 US-10-793-626-3470 Sequence 1.2 3645 1 US-10-793-626-3420 Sequence 1.2 3854 1 US-10-793-626-3420 Sequence 1.2 3854 1 US-10-793-626-3420 Sequence 1.2 3854 1 US-10-793-626-3420 Sequence 1.2 3843 1 US-10-793-626-3420 Sequence 1.2 3843 1 US-10-793-626-3420 Sequence 1.2 3843 1 US-10-793-626-3420 Sequence 1.2 3843 1 US-10-793-626-3457 Sequence 1.2 3546 1 US-10-793-626-3457 Sequence 1.2 3546 1 US-10-793-626-3457 Sequence 1.2 3546 1 US-10-793-626-3457 Sequence 1.2 3546 1 US-10-793-626-3457	29 35.6 1.2 340000 7 US- 31 35.4 1.2 36000 7 US- 32 3.5 1.2 23.08 1 US- 33 34.6 1.2 23.08 1 US- 35 34.4 1.2 12.99 1 US- 36 34.4 1.2 12.99 1 US- 37 34.4 1.2 12.99 1 US- 38 34.4 1.2 33.37 1 US- 39 34.4 1.2 33.37 1 US- 39 34.4 1.2 33.38 1 US- 40 34.4 1.2 35.36 1 US- 41 34.4 1.2 35.36 1 US- 42 34.4 1.2 35.36 1 US- 43 34.4 1.2 35.36 1 US- 44 34.2 1.2 35.45 1 US- 45 34.4 1.2 35.45 1 US- 46 34.2 1.2 35.45 1 US- 47 34.4 1.2 35.45 1 US- 48 34.2 1.2 35.46 1 US- 48 34.2 1.2 35.46 1 US- 49 34.2 1.2 35.46 1 US-	Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence
1.2 3609 1 US-10-793-626-3919 Sequence 1.2 4246 1 US-10-793-626-3885 Sequence 1.2 2308 1 US-10-510-386-51 Sequence 1.2 3473 1 US-10-510-386-51 Sequence 1.2 1274 1 US-10-927-641-34 Sequence 1.2 1274 1 US-10-927-641-34 Sequence 1.2 3073 1 US-10-793-626-3904 Sequence 1.2 3073 1 US-10-793-626-4270 Sequence 1.2 3516 1 US-10-793-626-4270 Sequence 1.2 3645 1 US-10-793-626-4110 Sequence 1.2 3864 1 US-10-793-626-4110 Sequence 1.2 3864 1 US-10-793-626-34270 Sequence 1.2 3864 1 US-10-793-626-3420 Sequence 1.2 3473 1 US-10-793-626-3420 Sequence 1.2 3473 1 US-10-793-626-3420 Sequence 1.2 3473 1 US-10-793-626-3457 Sequence 1.2 3473 1 US-10-793-626-3457 Sequence 1.2 3473 1 US-10-793-626-3457 Sequence 1.2 3473 1 US-10-793-626-3457 Sequence 1.2 3473 1 US-10-793-626-3457 Sequence 1.2 3473 1 US-10-793-626-3457 Sequence 1.2 3546 1 US-10-793-626-3457	30 35.4 1.2 3609 1 US- 31 35.2 1.2 4248 1 US- 33 34.6 1.2 3473 1 US- 34 34.4 1.2 1274 1 US- 36 34.4 1.2 1274 1 US- 37 34.4 1.2 1274 1 US- 38 34.4 1.2 3037 1 US- 39 34.4 1.2 3073 1 US- 40 34.4 1.2 3119 1 US- 41 34.4 1.2 3119 1 US- 42 34.4 1.2 3854 1 US- 43 34.4 1.2 3854 1 US- 44 34.2 1.2 3854 1 US- 43 34.4 1.2 3854 1 US- 44 34.2 1.2 3854 1 US- 45 34.4 1.2 3854 1 US- 46 34.4 1.2 3854 1 US- 47 34.2 1.2 3854 1 US- 48 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US-	Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence
1.2 4248 1 US-10-793-626-3885 1.2 2308 1 US-10-793-626-3865 1.2 2473 1 US-10-793-626-3343 1.2 1274 1 US-10-927-641-34 1.2 1299 1 US-10-927-641-34 1.2 13037 1 US-10-793-626-3904 1.2 3073 1 US-10-793-626-3904 1.2 3536 1 US-10-793-626-4270 1.2 3645 1 US-10-793-626-4110 1.2 3854 1 US-10-793-626-3420 1.2 4020 1 US-10-793-626-3424 1.2 3473 1 US-10-793-626-3434 1.2 3546 1 US-10-793-626-3434 1.2 3546 1 US-10-793-626-3457 1.2 3546 1 US-10-793-626-3457	31 35.2 1.2 4248 1 US- 32 4.6 1.2 24308 1 US- 34 34.4 1.2 1274 1 US- 37 34.4 1.2 1274 1 US- 38 34.4 1.2 1274 1 US- 39 34.4 1.2 3037 1 US- 40 34.4 1.2 3556 1 US- 41 34.4 1.2 3556 1 US- 42 34.4 1.2 3556 1 US- 43 34.4 1.2 3556 1 US- 44 34.2 1.2 3854 1 US- 44 34.2 1.2 3854 1 US- 45 34.2 1.2 3854 1 US- 46 34.2 1.2 3854 1 US- 47 34.2 1.2 3854 1 US- 48 34.2 1.2 3854 1 US- 48 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US-	Sequence 388 Sequence 613 Sequence 344 Sequence 374 Sequence 376 Sequence 366 Sequence 412 Sequence 412 Sequence 412 Sequence 412 Sequence 413 Sequence 342 Sequence 342 Sequence 343 Sequence 343
1.2 2308 1 US-10-510-386-61 1.2 3473 1 US-10-791-626-3343 1.2 1299 1 US-10-793-626-779 1.2 3073 1 US-10-793-626-779 1.2 3073 1 US-10-793-626-3904 1.2 3073 1 US-10-793-626-3904 1.2 3536 1 US-10-793-626-4270 1.2 3536 1 US-10-793-626-4270 1.2 3545 1 US-10-793-626-3957 1.2 3932 1 US-10-793-626-3420 1.2 3932 1 US-10-793-626-3434 1.2 3473 1 US-10-793-626-3457 1.2 3473 1 US-10-793-626-3457 1.2 3473 1 US-10-793-626-3457	32 34.6 1.2 2308 1 US- 33 34.6 1.2 3473 1 US- 34 34.4 1.2 1299 1 US- 35 34.4 1.2 1299 1 US- 37 34.4 1.2 3037 1 US- 39 34.4 1.2 3073 1 US- 40 34.4 1.2 3536 1 US- 41 34.4 1.2 3536 1 US- 42 34.4 1.2 3536 1 US- 43 34.4 1.2 3854 1 US- 44 34.2 1.2 3834 1 US- 44 34.2 1.2 3834 1 US- 45 34.4 1.2 3854 1 US- 46 34.4 1.2 3854 1 US- 47 34.4 1.2 3854 1 US- 48 34.2 1.2 3473 1 US- 48 34.2 1.2 3473 1 US- 49 34.2 1.2 3473 1 US- 49 34.2 1.2 3473 1 US- 46 34.2 1.2 3546 1 US- 47 34.2 1.2 3546 1 US- 48 34.2 1.2 3546 1 US- 49 34.2 1.2 3546 1 US- 46 34.2 1.2 3546 1 US-	Sequence 61. Sequence 33. Sequence 34. Sequence 39. Sequence 39. Sequence 36. Sequence 41. Sequence 41. Sequence 5. Sequence 5.
1.2 3473 1 US-10-793-626-3343 1.2 1274 1 US-10-273-641-34 1.2 1299 1 US-10-793-626-3904 1.2 3037 1 US-10-793-626-3904 1.2 3179 1 US-10-793-626-3606 1.2 3119 1 US-10-793-626-3606 1.2 3536 1 US-10-793-626-3957 1.2 3645 1 US-10-793-626-4110 1.2 3645 1 US-10-793-626-3420 1.2 4020 1 US-10-793-626-3434 1.2 3473 1 US-10-793-626-3434 1.2 3473 1 US-10-793-626-3457 1.2 3546 1 US-10-793-626-3457	33 34.6 1.2 3473 1 US- 34 34.4 1.2 1274 1 US- 35 34.4 1.2 1274 1 US- 36 34.4 1.2 3037 1 US- 39 34.4 1.2 3073 1 US- 40 34.4 1.2 3139 1 US- 40 34.4 1.2 3136 1 US- 41 34.4 1.2 3854 1 US- 43 34.4 1.2 3854 1 US- 43 34.4 1.2 3854 1 US- 44 34.2 1.2 3854 1 US- 44 34.2 1.2 3854 1 US- 45 34.2 1.2 3854 1 US- 46 34.2 1.2 3854 1 US- 47 34.4 1.2 3854 1 US- 48 34.2 1.2 3854 1 US- 49 34.2 1.2 3854 1 US- 40 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Sequence 334 Sequence 344 Sequence 396 Sequence 427 Sequence 427 Sequence 427 Sequence 427 Sequence 427 Sequence 417 Sequence 417 Sequence 57,
11.2 1274 1 US-10-927-641-34 11.2 1299 1 US-10-93-626-79 11.2 3037 1 US-10-793-626-3904 11.2 3073 1 US-10-793-626-3904 11.2 3153 1 US-10-793-626-4270 11.2 3645 1 US-10-793-626-4110 11.2 3854 1 US-10-793-626-4110 11.2 3854 1 US-10-793-626-3343 11.2 3473 1 US-10-793-626-3434 11.2 3546 1 US-10-793-626-3434 11.2 3546 1 US-10-793-626-3457 11.2 3546 1 US-10-793-626-3457	34 34.4 1.2 1274 1 US- 35 34.4 1.2 1239 1 US- 37 34.4 1.2 1399 1 US- 38 34.4 1.2 3073 1 US- 40 34.4 1.2 3136 1 US- 40 34.4 1.2 3536 1 US- 41 34.4 1.2 3536 1 US- 41 34.4 1.2 3645 1 US- 43 34.4 1.2 3645 1 US- 43 34.4 1.2 3654 1 US- 44 34.2 1.2 3932 1 US- 44 34.2 1.2 3473 1 US- 45 34.2 1.2 3473 1 US- 45 34.2 1.2 3473 1 US-	Sequence 34, Sequence 77, Sequence 77, Sequence 36, Sequence 42, Sequence 41, Sequence 51, Sequence 54, Sequence 34, Seque
1.2 1299 1 US-10-73-626-779 1.2 3073 1 US-10-793-626-3904 1.2 319 1 US-10-793-626-4206 1.2 319 1 US-10-793-626-4270 1.2 3536 1 US-10-793-626-4210 1.2 3545 1 US-10-793-626-3957 1.2 3952 1 US-10-793-626-3420 1.2 3932 1 US-10-793-626-3434 1.2 3473 1 US-10-793-626-3457 1.2 3546 1 US-10-793-626-3457 1.2 3546 1 US-10-793-626-3457	35 34.4 1.2 1299 1 US- 36 34.4 1.2 3037 1 US- 37 34.4 1.2 3037 1 US- 39 34.4 1.2 3139 1 US- 40 34.4 1.2 3545 1 US- 41 34.4 1.2 3545 1 US- 42 34.4 1.2 3845 1 US- 43 34.4 1.2 3843 1 US- 43 34.4 1.2 3832 1 US- 43 34.4 1.2 3832 1 US- 44 34.2 1.2 3473 1 US- 45 34.2 1.2 3473 1 US- 45 34.2 1.2 3473 1 US-	Sequence 373 Sequence 390 Sequence 390 Sequence 391 Sequence 411 Sequence 51, Sequence 54, Sequence 34,
1.2 3037 1 US-10-793-626-3904 1.2 3073 1 US-10-793-626-3606 1.2 3119 1 US-10-793-626-3606 1.2 3536 1 US-10-793-626-3957 1.2 3645 1 US-10-793-626-310 1.2 3932 1 US-10-793-626-3120 1.2 3473 1 US-10-793-626-3420 1.2 3473 1 US-10-793-626-3457 1.2 3473 1 US-10-793-626-3457 1.2 3473 1 US-10-793-626-3457	36 34.4 1.2 3037 1 US- 37 34.4 1.2 3073 1 US- 39 34.4 1.2 3073 1 US- 40 34.4 1.2 3536 1 US- 41 34.4 1.2 3645 1 US- 42 34.4 1.2 3645 1 US- 43 34.4 1.2 3854 1 US- 43 34.4 1.2 3952 1 US- 44 34.2 1.2 3473 1 US- 45 34.2 1.2 3473 1 US- 45 34.2 1.2 3546 1 US-	Sequence 396 Sequence 36 Sequence 439 Sequence 41. Sequence 5, Sequence 34.
1.2 3073 1 US-10-793-626-3606 1.2 3199 1 US-10-793-626-4270 1.2 3645 1 US-10-793-626-4110 1.2 3645 1 US-10-793-626-4110 1.2 3932 1 US-10-793-626-3420 1.2 4020 1 US-10-793-626-3434 1.2 3473 1 US-10-793-626-3434 1.2 3474 1 US-10-793-626-3457 1.2 3546 1 US-10-793-626-3457	37 34.4 1.2 3073 1 US- 38 34.4 1.2 3136 1 US- 40 34.4 1.2 3536 1 US- 41 34.4 1.2 3645 1 US- 42 34.4 1.2 3654 1 US- 43 34.4 1.2 3854 1 US- 43 34.4 1.2 3954 1 US- 43 34.2 1.2 4020 1 US- 44 34.2 1.2 3473 1 US- 45 34.2 1.2 3546 1 US- 46 34.2 1.2 3473 1 US- 47 US- 48 US- 49 US- 40 US- 40 US- 41 US- 42 US- 43 US- 44 US- 45 US- 46 US- 47 US- 48 US- 48 US- 49 US- 49 US- 40 US- 40 US- 41 US- 42 US- 43 US- 44 US- 45 US- 46 US- 47 US- 48 US- 48 US- 48 US- 49 US- 49 US- 40 US-	Sequence 36(Sequence 42) Sequence 41: Sequence 5, Sequence 34; Sequence 34:
1.2 3119 1 US-10-793-626-4270 1.2 3545 1 US-10-793-626-4357 1.2 3645 1 US-10-793-626-4110 1.2 3954 1 US-10-799-715-5 1.2 3954 1 US-10-793-626-3420 1.2 3473 1 US-10-793-626-3434 1.2 3546 1 US-10-793-626-3457 1.2 3546 1 US-10-793-626-3457	38 34.4 1.2 3119 1 US- 39 34.4 1.2 3536 1 US- 41 34.4 1.2 3645 1 US- 42 34.4 1.2 3854 1 US- 43 34.4 1.2 3932 1 US- 43 34.4 1.2 3932 1 US- 44 34.2 1.2 3473 1 US- 45 34.2 1.2 3473 1 US- 45 34.2 1.2 3473 1 US-	Sequence 427 Sequence 417 Sequence 417 Sequence 55, Sequence 55, Sequence 345
1.2 3536 1 US-10-793-626-3957 1.2 3654 1 US-10-792-626-4110 1.2 3932 1 US-10-793-626-3420 1.2 4020 1 US-10-793-626-3434 1.2 3473 1 US-10-793-626-3434 1.2 3473 1 US-10-793-626-3457 1.2 3546 1 US-10-793-626-3457	39 34.4 1.2 3536 1 US- 40 34.4 1.2 3645 1 US- 42 34.4 1.2 3645 1 US- 43 34.4 1.2 3932 1 US- 43 34.4 1.2 4020 1 US- 44 34.2 1.2 3473 1 US- 45 34.2 1.2 3546 1 US-	Sequence 339 Sequence 41. Sequence 5, Sequence 34.
1.2 3645 1 US-10-793-626-4110 1.2 3854 1 US-10-499-715-5 1.2 4020 1 US-10-793-626-3420 1.2 3473 1 US-10-793-626-3434 1.2 3473 1 US-10-793-626-3434 1.2 3546 1 US-10-793-626-3457 ALIGNMENTS	40 34.4 1.2 3645 1 US- 41 34.4 1.2 3854 1 US- 43 34.4 1.2 3952 1 US- 43 34.4 1.2 4020 1 US- 44 34.2 1.2 3473 1 US- 45 34.2 1.2 3546 1 US-	Sequence 41. Sequence 5, Sequence 34. Sequence 34.
1.2 3854 1 US-10-499-715-5 1.2 3932 1 US-10-793-626-3420 1.2 3473 1 US-10-793-626-3434 1.2 3546 1 US-10-793-626-3457 1.2 3546 1 US-10-793-626-3457	41 34.4 1.2 3854 1 US- 42 34.4 1.2 3932 1 US- 43 34.4 1.2 4020 1 US- 44 34.2 1.2 3473 1 US- 45 34.2 1.2 3546 1 US-	Sequence 5, Sequence 341 Sequence 341
1.2 3932 1 US-10-793-626-3420 1.2 4020 1 US-10-793-626-3434 1.2 3546 1 US-10-793-626-3457 1.2 3546 1 US-10-793-626-3457 ALIGNMENTS	42 34.4 1.2 3932 1 US- 43 34.4 1.2 4020 1 US- 44 34.2 1.2 3473 1 US- 45 34.2 1.2 3546 1 US-	Sequence 3420 Sequence 3434
1.2 4020 1 US-10-793-626-3434 1.2 3473 1 US-10-793-626-3343 1.2 3546 1 US-10-793-626-3457 ALIGNMENTS	43 34.4 1.2 4020 1 US 44 34.2 1.2 3473 1 US 45 34.2 1.2 3546 1 US	Sequence 343
1.2 3473 1 US-10-793-626-3343 1.2 3546 1 US-10-793-626-3457 ALIGNMENTS	44 34.2 1.2 3473 1 US-10-793-626-3 45 34.2 1.2 3546 1 US-10-793-626-3	
1,2 3546 1 US-10-793-626-3457 ALIGNMENTS	45 34.2 1.2 3546 1 US-10-793-626-3	3 Sequence 334
		33-626-3457 Seguence 345
RESULT 1 11S-10-793-626-3828	ALIGNMENTS	NMENTS
RESULT 1 11S-10-793-626-3828		
178-10-793-626-3828	RESULT 1	
	US-10-793-626-3828	
; Sequence 3828, Application US/10793626	; Sequence 3828, Application US/10/93626	

CIDS AND PROTEINS		synthetic
RESULT 1 US-10-793-626-3828 ; Sequence 3828, Application US/10793626 ; Publication No. US20050255478A1 ; GENERAL INFORMATION: ; APPLICANT: KIMMERLY, WILLIAM JOHN . THERE OF INFORMATION: STADEWILCONT REPIPEMENTS MICHELS AND PROTEINS	FILE REFERENCE: P013480US CURRENT APPLICATION NUMBER: US/10/793,626 CURRENT FILING DATE: 2004-03-04 PRIOR APPLICATION NUMBER: 60/164,258 PRIOR APPLICATION NUMBER: 560/164,258 NUMBER OF SEQ ID NOS: 4472 SOFTWARE: Patentin Ver. 2.1 SEQ ID NO 3828	; TYPE: DNA; ORGANISM: Artificial Sequence; COGANISM: Artificial Sequence; FEATURE:; OTHER INFORMATION: Description of Artificial Sequence; synthetic; OTHER INFORMATION: nucleic acid sequence

662 587

CTAATGAAGGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACA AGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCA

603

셤

υυυ

543 TTGGTTGCGATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTA 468 TIGITAAAATACTGAAATAGAAGTCAATAAACATCATCCCGAAACGGTGATTGAAGTAA

Gaps

52;

Score 612; DB 1; Length 3164; Pred. No. 5.2e-139; 0; Mismatches 845; Indels 5

21.2%; 57.4%;

Query Match
Best Local Similarity 57.4
Matches 1211, Conservative

ð g δ 722 647

723 ACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCA 648 crecagigadariridaaccirddagargaaaaaaaaadagacaacirgicgaarariciddac 783 GTAAAAAAGTGATTGGCATGAACGGGCTTGTGAATAAC---ATCGCGGATGAACGCCATA

588

ద

셤 à ద

ઠે

663

ઠે

782

707

839

gacgraaaartrangganiccgrootriagicgaiggcoarairgacgaagaaggcorar 767

```
CTTCTAGG 2604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTCTAGG 2569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-793-626-3853
                                                                                                                                                                                                                                                                                                                                                                                                                                            2357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2477
1877
                                                      1937
                                                                               1902
                                                                                                           1997
                                                                                                                                      1962
                                                                                                                                                                                                                                               2082
                                                                                                                                                                                                                                                                                                                                 2237
                                                                                                                                                                                                                                                                                                                                                                                                                 2262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2597
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  줨
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       요
                                                                          ద
                                                                                                     ठ
                                                                                                                                   ద
                                                                                                                                                                 ò
                                                                                                                                                                                   a
                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                            ద
                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ጵ
                                                    8
                                                                                                                                                                                                                                                                                         1156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1542 TTCAGCATTAAGTCATGCATTAGACGTTGCAGATGAGTTTGATGTTCAAGTCGCTTTACA 1601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1662 rerarrecararerarcaracreaageaecregregregrearecaceceearraareaa 1721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1757 CATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCCCCCCACTATTCCCTATACCAT 1816
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATCAGCTGCATATTCAAACATCTTACCTTCTTCTACAAACCCAACATTACCTTACACTCA 1781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1817 TAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCACCACCTCTAGACAAACGCAT 1876
                                                                                                                                                                                                      AGTTGAAAAGACTATGCAAATTATGGAGATGAAGCTACTTTCGGTGGCGGAAAATCAAT 1007
                                                                                                                                                                                                                                                              1008 TCGTGATGGTATGGCTCAAAATCCTAATGTGACAAGAGATGATAAAAATGTAGCGGATTT 1067
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGCGACTACTGTAACACCAGGACCTTGGCATATTCATCGCATGTTAGAAGCAGCAGAAGA 1421
                                                                                                                                      TCTTTATGGACCAACTGTAGGAGACTCTGTGAGATTAGGAGATACGAACTTGTTTGCACA 947
                                                                                            CGAATAAAAAGGTGGTAAATAAGCATGAGTTTTAAAATGACACAATCTCAATACACAAG 887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1482 TGAACAAATTCATGCAGGCGCTATAGGTCTTAAAGTACATGAAGATTGGGGAGCTACACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1602 TGCAGATACATTAAATGAAGCTGGATTTATGGAAGATACAATGGCTGCTGTGAAAGATCG
                                                                                                                                                                                                                                                                                         AGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGAT
                                                                                                                                                                                                                                                                                                                                                                AAGCCCTCATATGGTCGTGGGGTGTGGCACACACACACTAGCAGGGAAGGTATGATTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TACTGCCGGCGGTATCGATACACGTGCACTTCATCATCCTGAACAAGCTGAAGTTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGTCCTGTAGATGGCACGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACTTGAGAGTGGTATTACAACGCATATCGGTGGAGGAACTGGTGCTTCTGAAGGTGCTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1422 GATGCCTATTAATGTAGGATTTACTGGTAAAGGTCAAGCTGTCAATCATACTGCACTTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGAACAAGTAGAAGCGGGCGCGATTGGTTTTAAATTGCATGAAGACTGGGGCACAACACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CGCCATCCCATGCCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCAC
                                       TCCGTCCAAATGATTCAAATCAAAAGGCCGCCGTTAAAAACGATGCAGGCGAAGACAATG
                                                                                                                                                                              AGTAGAACATGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGGGGGTAAAACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                             -----reacarcarcarregrecaacaacreararrarrecrereaaegraaaarrer
                                                                                                                                                                                                                                                                                                                                                                                                                                                          TACCGCTGGGGGAATCGATTCACACACCCACTTCCTTTCTCCCACAAATTCCCTACCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TGCGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATGAACGGGCG
              AACATAAAGCGCTTGACAAGGCGAAATCTCACGGATTTATCAAGTAAGGAGACTCCCATG
                                                                                                                       TACCTACGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGA
                                                                                                                                                                                                                                    CCGTGAGGGTATGGGTCAGA-----GCAATAGCCCTGATGAAACACCCTTAGATTT
                                                                                                                                                                                                                                                                                                                  <u> AGTTTTTAACTAACGCATTAATTTATTATGACAAGATTGTTAAAGCAGATATCGGAAT</u>
                                                                                                                                                                                                                                                                                                                                               TAAAAACGCCAAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGT
                                                                                                                                                                                                                                  1046
                                                                                                                                                                                                                                                                                                                                               1157
                                                                                                                                                                                                                                                                                                                                                                                                    1217
                                                                                                                                                                                                                                                                                                                                                                                                                                                          1277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1362
                                                                                            828
                                                                                                                                                                                                         948
                                                                                                                                                                                                                                                                                       1097
                                                                                                                                                                                                                                                                                                                                                                                                                               1188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1457
                                                                                                                                                  888
                                                                                                                                                                              986
                                                                                                                      926
                                                                                    g
                                                                                                                                           q
                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                         엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ga y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8 %
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  상
임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8 6 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ठ व
                                셤
                                                                                                                   ઠે
                                                                                                                                                                      8
            8
                                                                ò
```

```
2356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATATACAATCAATCCTGCCATTACACATGGTATTTCTGACTATGTTGGATCTGTAGAAGC 2141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: KIMMERLY, WILLIAM JOHN
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
FILE REFERENCE: PU348003
CURRENT APPLICATION NUMBER: US/10/793,626
CURRENT APPLICATION NUMBER: 60/164,258
PRIOR FILING DATE: 1999-11-09
NUMBER OF SEQ ID NOS: 4472
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 3853
LENGTH: 3234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    cerarracaedararedecerarragararegaedeceraeracaedecere
                                                                                                                                                                                                                                                                                                                                                          rerecerdaadringraacaceraciridecaagrinecacacerargaaagaacaacee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     <u>accartagarigergacrrrgaararcacgaraararrcgrarraaacgrracarrgcaaa</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2297 CACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGCCTGAAAAAGCTGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TACTGCTATGACTTTTTTTTAACACTGCATATGAAAACGGTATTTATCGTCAACTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GITCAACGACAAAACGGCAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAATAATAATGCTACGTAAAATAGATGTAGATCCACAAACATATGAGGTATTCGTTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGGCAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTT
CCGCGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCGGGCTCTATCGCGGCTGAAGA
                                                            1842 accagaagacatrgcatrrigcagarrcrcgraracgraaggaaacraraggaggaga
                                                                                                                                       TGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAATTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                     TAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATACACTATCAACCCCGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GGGCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2142 GGGTAAACTTGCCGATTTAGTAATGTGGGAACCAGAATTCTTCGGTGCCAAACCCGATCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        rcraaaacgaarggricgaccagiragaaararragaaarrraacraaggcagarargaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  rograaraarcacaagraagcagcaacagaarraccarraacacaaagaracrrr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: DNA
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: Description of Artificial Sequence: synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; Sequence 3853, Application US/10793626
; Publication No. US20050255478A1
; GENERAL INFORMATION:
```

```
rcrariccarargiarcaracrdaageagcrdcrdcrdcrcarecaccrdacrraarcaa 1790
GATGCCTATTAATGTAGGATTTACTGGTAAAGGTCAAGCTGTCAATCATACTGCACTTAT 1550
                                                                           recagatacattaaatgaagctggatttatggaagatacaatggctgctgtgaaaatcg
                                                                                                                                                                                                                                                                                                                                                                                                                                                             accacaaacarrocarrrocacarrocararacaraaccaaacraraccacacaaaca
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2091 ACCATTAGATGGTGACTTTGAATATCACGATAATAATCGTATTAAACGTTACATTGCAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATGGCGTGAAAAGGCTGGG
                                               AGAACAAGTAGAAGCGGGGGGGGGTTTTAAATTGCATGAAGACTGGGGCACAACACC
                                                                                                                                                                                                                                                                                                                         1757 CATGGCAGGCGAGCTCAATATTCTACCCTCCACCACCCCCCCACTATTCCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        cerarracaacararececerarraagrarecraacarracacaarece
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  rercecretakarinerakakararinecakarricarakerenerarekakakakakereke
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATACACTATCAACCCCGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2151 ATATACAATCAATCCTGCCATTACACATGGTATTTCTGACTATGTTGGATCTGTAGAAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGGTAAACTTGCCGATTTAGTAATGTGGGAACCAGAATTCTTCGGTGCCAAACCGATCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2391 TACTGCTATGACTTTTGTTTCTAACACTGCATATGAAAACGGTATTTATCGTCAACTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CTTAGAGCGCCAAGTTCTACCGGTCAAAAACTGCCGTAACATCACCAAGAAGACTTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCA
                                                                                                                                                                                trcaccarraagrearcarragacerrecadareagrirrearerrearerea
                                                                                                                                                                                                                                  CACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATGAACGGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1817 TAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCACCACCTAGACAAACGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1851 CAACACTGTAGATGAACATTTAGACATGGTTATGATTACTCACCATCTTAATGCTTCAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAATTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GGGCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTTGTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      retrotradacercecarcaricacicaciacana arcercancia accidente antecente analysis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GTTCAACGACAAAACGGCAAAAATCACCGTCGAAAAACCTTCGAGGTCTTTGTAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2511 AAATAATAATGCTACACCTAAAATAGATGTAGATCCACAAACATATGAGGTATTCGTTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGGCAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               rocraaraaarcacaagraadaacaacaacaaarraccarraacacaaaaaracrrrr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CCGCGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGA
                                                                                                                                        1577
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1911
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2271
       1491
                                                                                                                                                                                                                                                                                                                            1697
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1877
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1937
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2031
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2477
                                          के क्षे क
                                                                                                                                                                       셤
                                                                                                                                                                                                                    8 8 8
                                                                                                                                                                                                                                                                                                                                                          8 8 8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8 4 4 4 4 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8 4 8 6 8 6 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8 4 8 4 8 4 8 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -----TGACATCATCATTGGTGCAACAACTGATATTATTGCTGCTGAAGGTAAAATTGT 1310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACTIGAGAGIGGTATTACAACGCATATCGGIGGAGGAACTGGIGCTTCTGAAGGIGCTAA 1430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GTATTCTATGAATGTGGGCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAAAACAACTTGT 1516
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TACCGCTGGGGGAATCGATTCACACACCCACTTCCTTTCTCCACACAATTCCCTACCGC 1336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGCGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGA 1456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            rcrrrarggaccaacrgraggagacrcrgrgagarraggagaracgaacrrgrrgcaca 1016
                                                                                                                                                                                                                                                            662
                                                                                                                                                                                                                                                                                                         959
                                                                                                                                                                                                                                                                                                                                                   AGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCA 722
                                                                                                                                                                                                                                                                                                                                                                                                                                               ACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCA 782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       crecagigadartrigaaccregaagargaaaaaaaaadachacacregecaanarreregae 776
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GTAAAAAAGTGATTGGCATGAACGGGCTTGTGAATAAC---ATCGCGGATGAACGCCATA 839
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GACGTAAAATTTATGGATTCCGTGGTTTAGTCGATGGCGATATTGACGAAGAACGCGTAT 836
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           897 CGAATAAAAAGGTGGTAAATAAGCATGAGTTTTÄÄÄÄTGÄCÄCÄÄTCTCÄÄTÄCACÄÄG 956
                                                                                                                                                                                                                                                                                                                                                                             AAAATACAGGGGATAGACCTATACAAGTAGGTTCACATTTCCACTTTTTGAAGGAAATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAAATGAAAAAACAAGAATATGTAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TACTGCCGGCGGTATCGATACACATGCACTTCATCAATCCTGAACAAGCTGAAGTTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGCCACAGGTCCTGTAGATGGCACGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTGGTTGCGATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTA
                                                                                                                                                                                                          <u>rrgrtaaaaaractgaatagagrcaaraaacarcarcccgaaacggataa</u>
                                                                                                                                                                                                                                                            CTAATGAAGGCCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                840 AACATAAAGCGCTTGACAAGGCGAAATCTCACGGATTTATCAAGTAAGGAGACTCCCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TACCTACGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGTAGAACATGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGGGGTAAAACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1077 rcgrcarccrananccrananccranges regardare regardare recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordante recordad recordante recordante recordante recordante recordante recordad recordante recordante recordante recordante recordante recordad recordante recordante recordante recordante recordante recordad recordante recordante recordante recordante recordante recordad
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGTTTTAACTAACGCATTAATTATTGATTATGACAAGATTGTTAAAGCAGATATCGGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Takakaticertaratritrangarcegtakageregakakeeragaratragaraker
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAGCCCTCATATGGTCGTGGGTGTGGGCACAGAAGCACTAGCAGGGGAAGGTATGATTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CCGTGAGGGTATGGGTCAGA-----GCAATAGCCCTGATGAAAACACCCTAGATTT
                                                                                                                        Gaps
                                                                                                                     52;
                                                                      Length 3234;
                                                                                                                     Indels
                                                                      Score 612; DB 1; L. Pred. No. 5.3e-139; 0; Mismatches 845;
    ; OTHER INFORMATION: nucleic acid sequence US-10-793-626-3853
                                                                         Query Match 21.2%;
Best Local Similarity 57.4%;
Matches 1211; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                  657
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                957
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1397
                                                                                                                                                                                                                                                                                                                                                                                                                                               723
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          717
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1457
                                                                                                                                                                                                                                                            603
                                                                                                                                                                                                                                                                                                                                                      663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   926
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8 6 8 6
                                                                                                                                                                     ò
                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                        8 B
                                                                                                                                                                                                                                                                                                                                                                                    8 8 8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6 6 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           유
장
유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8 6 6 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8 6 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                $ 8 $
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
```

961

```
TCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGA 1968
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1382 TAAATGGTGATGCTAATGGCTCCATACCAACATCAGAGCCTTTGAAATATCGCAAAATGT 1441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGATTACTCACCATCTTAATGCTTCAATACCAGAAGACATTGCATTTGCAGATTCTCGTA 1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CAGAATTCTTCGGTGCCAAACCCGATCTTGTTGAAAGGTGGCATGATTAACTCAGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATGAAAACGGTATTTATCGTCAACTCAAACGAATGGTTCGACCAGTTAGAAATA 1561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1562 TTAGAAATTTAACTAAGGCAGATATGAAAATAATAATGCTACACCTAAAATAGATGGAG 1621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1622 ATCCACAAACATATGAGGTATTCGTTGATGGTAATAAAATCACAAGTGAAGCAGCAACAG 1681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATTTCCGCATTAAGCGCTACATCTCCAAATACACTATCAACCCCCGCTTTGACCCCACGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1442 ATGGTCAATTTGGTGGTAACATTACACATACTGCTATGACTTTTGTTTCTAACACTGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GCCGTAACATCACCAAGAAAGACTTCAAGTTCAACGACAAAACGGCAAAAATCACCGTCG
                                                                                                 CAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTGCGGATAAGAATAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TGAGCGAGTATATCGGCTCTGTGGAAGAGGCCAAGATCGCCGACTTGGTGGTGTGGAATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TIGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAAGTCGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATGAAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCGCCCAAGTTCTACCGGTCAAAAACT
                                                                      ATGAATACGATGTGCAAGTTTGTATCCACACGATACAGTCAATGAGGCAGGTTATGTAG
                                                                                                                                                                                 <u> argagitricarcitcaacicectriacarecacaracatraaargaacicecarriarec</u>
                                                                                                                                                                                                                                                        <u> aacaracaarescricercicaaacarecrerarrecararerarerarereaacere</u>
                                                                                                                                                                                                                                                                                              GTGGAGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTACCCTCCT
                                                                                                                                                                                                                                                                                                                               Gregregreacercheacriaarcaarcaecrecararcaaacarcriaccricri
                                                                                                                                                                                                                                                                                                                                                                       CCACCACCCCCATATICCCTATACCATIAATACGGTTGCAGAACACTTAGACATGCTCA
                                                                                                                                                                                                                                                                                                                                                                                                        cracaaacccaacarraccrracacrecacacacreracargaacarragacargerra
                                                                                                                                                                                                                                                                                                                                                                                                                                              TGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAAAGCCGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        rriccacaccerárgaaagaacaacegeaccarragaricercarregacrirgaararcaceara
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          rrrcrcacrargrandarcrcraaagcccccraaacrrrccccarrragraarcrccaac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAATGGGCGATTCTAACGCGTCTGTGCCCCACCCCCAACCGGGTTTATTACCGCGAAATGT
 GCAATAGCTCTAGCAAAAACAACTTGTAGAACAAGTAGAAGCGGGCGCGATTGGTTTTA
                                Grcaagcrgrcaarcaracrgcacrrarrgaacaaarrcargcaggcgcraraggrcrra
                                                                                                                                                                                                                        ATGACACCCTAAATGCAATGAACGGGCGCGCCATCCATGCCTACCACATTGAGGGAGCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAGTGCCTCTAGCCCAGCGCTACACTTTCTTGTAG 2603
                                                                                                                                                                                                                                                                                           1729
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2269
1489
                                                                        1549
                                                                                                           662
                                                                                                                                               1609
                                                                                                                                                                                   722
                                                                                                                                                                                                                        1669
                                                                                                                                                                                                                                                                                                                                   842
                                                                                                                                                                                                                                                                                                                                                                       1789
                                                                                                                                                                                                                                                                                                                                                                                                         902
                                                                                                                                                                                                                                                                                                                                                                                                                                              1849
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  962
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1022
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1969
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2029
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2089
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2389
                                    602
                                                                                                                                                                                                                                                        782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OD
D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                      Š
                                                                                                 셤
                                                                                                                                       ठे
                                                                                                                                                                            유
                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                             유
                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ⋧
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       염장
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ⋧
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1017
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1068
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TGCACCGCATGTTGCGCGCAGCAGAGAGTATTCTATGAATGTGGGCTTTTTTGGGCAAAG 1488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GCGGCACAGGTCCTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCAAATGGAACT 1428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTCATCGCATGTTAGAAGCAGCAGAAGAGATGCCTATTAATGTAGGATTTACTGGTAAAG 601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          422 ricaricaariccrgaacaacrgaagrrgcacrrgagagrggrarracaacgararicggrg 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAGGAACTGGTGCTTCTGAAGGTGCTAAAGCGACTACTGTAACACCAGGACCTTGGCATA 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   67
                                                                                                                                                                                           APPLICANT: KIMMERLY, WILLIAM JOHN
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
FILE REPERENCE: PU3480U2
CURRENT APPLICATION NUMBER: US/10/793,626
CURRENT FILING DATE: 2004-03-04
PRIOR APPLICATION NUMBER: 60/164,258
PRIOR PILIAGIOATE: 1999-11-09
NUMBER OF SEQ ID NOS: 4472
SOFTWARE: Patentin Ver. 2.1
LENGTH: 1716
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTATACCACCTATGGCGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATATTATTGCTGCTGAAGGTAAAATTGTTACTGCCGGCGGTATCGATACACACGTGCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GATTAGGAGATACGAACTTGTTTGCACAAGTTGAAAAAGACTATGCAAATTATGGAGATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATAGCCCTGATGAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATCGACTACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATTGGCAAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    248 ACAAGATTGTTAAAGCAGATATCGGAATTAAAAATGGTTATATTTTTAAGATCGGTAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CAGGAAACAAGGACATGCAAGATGCCGTAAGCCCTCATATGGTCGTGGGTGTGGGCACAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAGCACTAGCAGGGGAAGGTATGATTATTACCGCTGGGGGAATCGATTCACACACCCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TCCTTTCTCCACAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGAAAATGAAAAAACAAGAATATGTAAATACCTACGGACCCACCAAAGGCGATAAAGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Tradadricacacaarcreadacacaacrerrangeaccaacreragagacrergrea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AACTTAAATTTGGCGCGGGTAAAACTATCCGTGAGGGTATGGGTCAGA-----GCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAGCTACTTTCGGTGGCGGAAAATCAATTCGTGATGGTATGCCTCAAATCCTAATGTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURE:
OTHER INFORMATION: Description of Artificial Sequence: synthetic
FEATURE INFORMATION: nucleic acid sequence
US-10-793-626-117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 1716;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match 20.1%; Score 578.6; DB 1; Best Local Similarity 59.5%; Pred. No. 4.8e-131; Matches 1021; Conservative 0; Mismatches 679;
                                                                                                                                           Sequence 117, Application US/10793626
Publication No. US20050255478A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: DNA ORGANISM: Artificial Sequence
                                                   2631 ATTĊTAGG 2638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       958
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    482
                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ∂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8 6 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8 &
                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
```

1469

1529

Tue

```
GAACACTTAGACATGCTCATGACATGCCACCTAGACAAACGCATCCGCGAGGATTTA 1889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1200 TCAAATATTTTACCTTCATCTACAAATCCAACTTTGCCTTATACACATAATACTGTGTAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATTACACGAACATGCAAGTAGCACATCGCATGAAAGAACAACGTGGTCCTTTAGATGGT
                                                                                                                                                                                                         780 ATTACGACTCATATTGGTGGTGGTACTGGTGCTTCAGAAGGTTCTAAAGCAACAACTGTA
                                                                                                                                                                                                                                                                                                 GTGGGCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAAACAACTTGTAGAACAAGTAGAA
                                                                                                                                                                                                                                                                                                                CACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACAGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CICAATATICIACCCICCICCACCACCCCCCACTATICCCIATACCATIAATACGGTIGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GATTTTGAACATAATGATAATAGCATCAAACGTTATATCGCTAAATATACAATTAAC
 1170 ATCCATGCCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCATATG
                                                                                     ATCGATTCACACACCCACTTCCTCCCACACAATTCCCTACCGCTCTAGCCAATGGC
                                                                                                                                               720 ATTGATACTCATGATCATTTATTAATCCTGAACAAGCAGAGGTCGCATTAGAAAGTGGT
                                                                                                                                                                            GTTACAACCATGTTTGGAGGCGCCACAGGTCCTGTAGATGGCACGAATGCGACTACTATC
                                                                                                                                                                                                                                                      CATGCATTAGATGTGCTGATGAATTTGATGTTCAAATTGCATTACATGCAGATACTTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAACATTTAGATATGGTAATGATTACTCACCATTTAAATGCGGCTATTCCTGAAGATATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATGGGTGTGATGATGACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1380 Ariegericharricagnaricarnachriccearricacaaccaaricceccereraceacaacha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2010 ATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAAGAATTTGGTAAGCTTCCTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTATCAAC
                                                          GTCGTGGGTGTGGGCACACAGAGCACTAGCAGGGAAGGTATGATTATTACCGCTGGGGGA
                                                                                                                                                                                                                                      CAATITICICAAAGCCGTAICCGCCCCCGGCTCTAICGCGGCTGAAGAIGTGCTCCAIGAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cccectricacccaceecereaeceaerararceecrerereaagaeeeaa
                Sequence 4032, Application US/10793626
Publication No. US20050255478A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-10-793-626-4032
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1650
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1710
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1770
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1830
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1950
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1440
                                909
                                                             1230
                                                                                                                     1290
                                                                                                                                                                               1350
                                                                                                                                                                                                                                         1410
                                                                                                                                                                                                                                                                                                  1470
                                                                                                                                                                                                                                                                                                                               900
                                                                                                                                                                                                                                                                                                                                                            1530
                                                                                                                                                                                                                                                                                                                                                                                         096
                                                                                                                                                                                                                                                                                                                                                                                                                      1590
                                                                                                                                                                                                                                                                                                                                                                                                                                                  1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2130
                        셤
                                                           8
                                                                               g
                                                                                                              જે
                                                                                                                                              용
                                                                                                                                                                               ઠ
                                                                                                                                                                                                   원
                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                   요
                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                         ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ℰ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         충
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TATACCACCTATGGCGAAGAACTTAAAATTTGGCGGGTAAAACTATCCGTGAGGGTATG 1058
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAA 1169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGTCAGAGCAATAGCCC-----TGATGAAAACACCCTAGATTTAGTCATCACTAAC 1109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        679 TCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATTGG 738
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           855
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      306 AGGAAAAAGATCATGAGCTTTAAAATGACGCAAAATCAATATACGAGCTTATACGGTCCA 365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGAC 998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACTGTTGGAGATTCCATTCGTTTAGGTGATACGAATCTATTTGCTCAAATAGAAAAAGAC 425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             426 TATGCGGTTTATGGTGAAGAAGCTACTTTTGGTGGTGGTAAATCTATTAGAGACGGTATG 485
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCGCAAAATCCTCGTGTAACACGTGATGACGTGAACGTTGCAGACCTTGTCATTTCTAAT 545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     246 AAATGATGAATATGCAGGTGTATTCGGAGATAACGGTGCTGAAAAACGTGAATAAAAAGG 305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ---AGTAAGGAGACTCCCATGAAAATGAAAAACAAGAATATGTAAATACCTACGGACCC 938
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAGTGATTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CATGAACGGGCTTGTGAA---TAACATCGCGGATGAACGCCATAAACATAAAGCGCTTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              619 ATCCTTGCATGTGGGTAGCCATTTCCACTTTTGAAGCTAACAAGGCACTAAAATTCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     186 TTTTCGTGGTATGGTCAATGGTCCTATCGATGAGTCACGTGTCTATCGCCCAACTGATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 55;
                                                                                                                                                                                                                                                                                                                                                                                                                                    ; DB 1; Length 1612; 4.1e-101;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Mismatches 630; Indels
RESULT 4

US-10-485-517-26

Sequence 26, Application US/10485517

Publication No. US20050256299A1

GENERAL INFORMATION:
APPLICANT: University of Sheffield
APPLICANT: Biosynexus Incorporated
APPLICANT: Biosynexus Incorporated
APPLICANT: Foster, Simon
APPLICANT: Mond, James
TITLE OF INVERTION: Antigenic Polypeptides
FILE REFERENCE: P100629W0

CURRENT APPLICATION NUMBER: US/10/485,517
CURRENT PILING DATE: 2004-02-02
PRIOR APPLICATION NUMBER: GB 0118825.9
PRIOR APPLICATION NUMBER: GB 0118925.9
PRIOR APPLICATION NUMBER: GB 020349.9

PRIOR APPLICATION NUMBER: GB 020349.9

NUMBER: OF SEQ ID NOS: 424

SEQ ID NOS: 424
                                                                                                                                                                                                                                                                                                                                                                                                                                    15.8%; Score 455; 57.5%; Pred. No. 4
                                                                                                                                                                                                                                                                                                                                                                          ; TYPE: DNA
; ORGANISM: Staphylococcus aureus
US-10-485-517-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity 57.5
Matches 928; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     928
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1059
                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               882
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         939
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  666
                d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             음
```

ဖ

```
2370 CTGCAGTGAGATTTGAACCTGGAGATGAAAAAAAGTACAACTTGTCGAATATTTCTGGAC 2429
                        GTAAAAAGTGATTGGCATGAACGGGCTTGTGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3444 ATCAGCTGCATATTCAAACATCTTACCTTCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3324
                                                                                                                                                                                           2610
                                                                                                                                                                                                                                                                                                                1097
                                                                                                                                                                                                                                                                                                                                        2790
                                                                                                                                                                                                                                                                                                                                                                1157
                                                                                                                                                                                                                                                                                                                                                                                       2850
                                                                                                                                                                                                                                                                                                                                                                                                                                      2910
                                                                                                                                                                                                                                                                                                                                                                                                                                                             1277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3024
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1577
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1637
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1697
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1757
                                                                                                                                                                                                                    986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2964
                        783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                        셤
                                                                                                                                           셤
                                                                                                                                                                                      임
                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                               요
                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                           g
                                                                                                                    ò
                                                                                                                                                                   ò
                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                               8
                      ò
                                                                       ð
                                                                                                                                                                                                                                                                                                  1712
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2310 AAGCATTAGAATTTGATCGTGAGAAAGCATATGGTAAACATTTGGATATTCCTGCAGGAG 2369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGTIGTAGCTGCTGAGGITGCACGTCGTAGAAAGCAAGAGGACTTAAACTTAATCATCC 1952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1953 TGAAGCACTTGCTTTAATCAGTGATGATTATTAGAAGGCGCGCGTGATGG---TAAAAAC 2009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     602
                                                                                                                                                                                                                                                                                                                                                                                                                          243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  663 AGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCA 722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCA 782
                                                                                                                                                                                                                                                                             99
      APPLICANT: KIMMERLY, WILLIAM JOHN
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
FILLE REFERENCE: PU3480U2
CURRENT APPLICATION NUMBER: US/10/793,626
CURRENT FILING DATE: 2004-03-04
PRIOR PILING DATE: 1999-11-09
NUMBER OF SEQ ID NOS: 4472
SOFTWARE: PATENTIN Ver. 2.1
SED ID NO 4032
LENGTH: 3475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2130 AATAACAGTCCATCACCCAATCGTTTAAGGAGGCTATATCAATGATTCCTGGTGAAATTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CATATTIATICAACTITATACACTITAATTTAAAAAAACATTGTTAATTAGATAAATTAT
                                                                                                                                                                                                                                                                                                                                                                                                 1773 CAAAGTATTATACTTGTATACTTCATTAAATAGTTTTAATATAAAATTTTGCAAGACAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                 TAATATGAAGGAAGGGATAGTTTTGCACTTTACACAACGAGACAACAAATTGATGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2070 CGTAGCTAACATGATTACAGAACTTGAAATTGAAGCAACTTTTCCAGATGGTACTAAGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     484 TGTAACTGTGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGC-GAAGTGAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TIGGTIGCGATAAAGACAICGAGCICAAIGCAGGCAAAGAAGIAACCGAACTIGAGGITA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   603 CTAATGAAGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACA
                                                                                                                                                                                                                                                                                                                             424 GGTGGGTAATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACT
                                                                                                                                                                                                                                                                                                    <u> Aaratroarcaarracatricartriaciaaaaraaricirrariciaceregararitri</u>
                                                                                                                                                                                                                                                                                                                                                                           ATATTAAAAAGTTAATAAAAGTAACGAAATTAGGACTATAATCCCATTGCCTTTAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                         TTAACACAAGGA----GTAATAGGTGAAACTCACACCCAAAGAGGAAAAGTTCTTGTT
                                                                                                                                                                                                                                                                            ATTTTCCARCACTTCAAGCACATATTGATCCTGTGTTGTGGGGTGGTAAATTRCRACTTGT
                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                Description of Artificial Sequence: synthetic
                                                                                                                                                                                                                                                      59;
                                                                                                                                                                                                                              Length 3475;
                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                              Score 424.4; DB 1;
Pred. No. 1.6e-93;
1; Mismatches 762;
                                                                                                                                                                              ; OTHER INFORMATION: Description of Artific ; OTHER INFORMATION: nucleic acid sequence US-10-793-626-4032
                                                                                                                                                                                                                             Query Match
Best Local Similarity 55.1%;
Matches 1010; Conservative
                                                                                                                                           TYPE: DNA
ORGANISM: Artificial Sequence
 SENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   543
                                                                                                                                                                                                                                                                                                                                                   1713
                                                                                                                                                                                                                                                                                                                                                                                                                                                  1833
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1893
                                                                                                                                                                                                                                                                             7
                                                                                                                                                                                                                                                                                                     1653
                                                                                                                                                                                                                                                                                                                             67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  723
                                                                                                                                                                                                                                                                                                                                                                                                                          187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        304
                                                                                                                                                                   FEATURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     d
                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                       õ
                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8 6 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                             ò
```

```
1636
                                                                                                                                                                                                                                                                                                                                                     2549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CGCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCAC 1756
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2550 CGAATAAAAAGGTGGTAAATAAGCATGAGTTTTAAAATGACACAATCTCAATACACAAG 2609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TGAACAAATTCATGCAGGCGCTATAGGTCTTAAAGTACATGAAGATTGGGGAGCTACACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      actricacaderceratizacia de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GATGCCTATTAATGTAGGATTTACTGGTAAAGGTCAAGCTGTCAATCATACTGCACTTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3084 AGCGACTACTGTAACACCAGGACCTTGGCATATTCATCGCATGTTAGAAGCAGCAGAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATGAACGGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               recagaracarraaaridaagcregarrrraregaagaracaaregecrecrergaaagareg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGAACAAGTAGAAGCGGGGGGGGGTTTTTAAATTGCATGAAGACTGGGGCACAACACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          rrcaecarraagrcarcarragacerrecaeareaerrearreareareaercearraea
2490 recerceaargarreaarcaaakeeceecerraaaaceareaaeeaaeaaaaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -- AAAATGAAAAAACAAGAATATGTAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TACCTACGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      rcrrrargeaccaacrgraegacrcrereagarraegagaracgaacrrerrecaca
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGTAGAACATGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGCGGGTAAAACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1046 CCGTGAGGGTATGGGTCAGA-----GCAATAGCCCTGATGAAACACCCTAGATTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1217 AAGCCCTCATATGGTCGTGGGTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----reacarcarcarregrecaacaacreararrarregrecrearearearrer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | TACCGCTGGGGGAATCGATTCACACCCACTTCCTTTCTCCCACAACAATTCCCTACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TACTGCCGGCGGTATCGATACACGTGCACTTCATCAATCCTGAACAAGCTGAAGTTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGTCCTGTAGATGGCACGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GTATTCTATGAATGTGGGCTTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAAACAACTTGT
                                                                                                                                                                                            <u>AACATAAAGGGGTTGACAAGGCGAAATCTCACGGATTTATCAAGTAAGGAGACTCCCATG</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2730 regigaregraregereaaarecraarereaeaeaeaearearaaaaareraecegarrr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TGCGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATGTTGCGCGCACAGAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CATGGCAGGCGAGCTCAATATTCTACCCTCCT 1788
```

Gaps

.. 9

Length 309

```
NS-10-193-626-115

Sequence 115, Application US/10793626

Publication No. US2005025547841

Publication No. US2005025547841

TITLE OF INVERMITON: TAPHTLACCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS

TITLE OF INVERMITON: TAPHTLACCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS

CURRENT APPLICATION NUMBER: US/10/793,626

CURRENT PILING DATE: 2004-03-04

PRIOR APPLICATION NUMBER: 60/164,258

PRIOR FILING DATE: 1999-11-09

NUMBER OF SEQ ID NOS: 4472

SOFTWARE: Patentin Ver. 2.1

LENGTH: 336
                                                                                                                                                                                                                                                                                                          1174 ATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCATATGGTCG 1233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1354 CAACCATGTTTGGAGGCGGCACAGGTCCTGTAGATGGCACGAATGCGACTACTATCACTC 1413
                                                                                                                                                                                                                                                                                                                                                                                                              TGGGTGTGGGCACACACACCACTAGCAGGGAAGGTATGATTATTACCGCTGGGGGAATCG 1293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1294 ATTCACACCCCACTTCCTTTCTCCCACAACAATTCCCTACCGCTCTAGCCCAATGGCGTTA 1353
                                                                                                                                                                                                                                                                                                                                                    248 TTAAGATCGGTAAAGCTGGAAACCCAGATATAATGGATAACGT-----TGACATCATCA 195
                                                                                                                                                                                                                                                         308 raarrarrargacaagarraraagacagararcagaarraraagararrararar 249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                194 TTGGTGCAACAACTGATATTATTGCTGCTGAAGGTAAAATTGTTACTGCCGGCGGTATCG 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               654 AAGCTAACAAGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTC 713
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 65 AAGCAAATAAAGCATTAGAATTTGATCGTGAGAAAGCATATGGTAAACATTTGGATATTC 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                714 CCTCTGGCAACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTC 773
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  125 crecadgaecrecadreadarrirdaaccredadareaaaaaaaaaaaaacrreredaar 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1114 TGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAAATCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5 TTGAAGTAAAAATACAGGCGATAGACCTATACAAGTAGGTTCACATTTCCACTTTTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              134 ATACACACGTGCACTTCATCATCCTGAACAAGCTGAAGTTGCACTTGAGAGTGGTATTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            594 TTGAGGTTACTAATGAAGGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTG
; OTHER INFORMATION: Description of Artificial Sequence: synthetic; CTHER INFORMATION: nucleic acid sequence US-10-793-626-121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OTHER INFORMATION: Description of Artificial Sequence: synthetic OTHER INFORMATION: nucleic acid sequence
                                                                                                   Score 97.4; DB 1; Length 3 Pred. No. 7.9e-15; 0; Mismatches 121; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match 2.6%; Score 74.2; DB 1; Length 3 Best Local Similarity 56.9%; Pred. No. 3.5e-09; Matches 136; Conservative 0; Mismatches 103; Indels
                                                                                                        3.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: DNA ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1414 CGGGCAAATGGAA 1426
                                                                                                   Query Match
Best Local Similarity 59.4'
Matches 186; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CAGGACCTTGGCA 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-793-626-115
                                                                                                                                                                                                                                                                                                                                                                                                                 1234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                쇰
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                               ઠ
                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                    원
                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                              Sequence 2, Application US/10834151

Publication No. US20050244836A1

SEDENAL INFORMATION:
APPLICANT: TSANG, TAT-KIN
APPLICANT: ZHANG, HONGJUN
TITLE OF INVENTION: METHODS AND COMPOSITIONS TO DETECT BACTERIA USING MULTIPLEX PCR
FILE REFERENCE: 37611-95516
CURRENT APPLICATION NUMBER: US/10/834,151
CURRENT FILING DATE: 2004-04-28
NUMBER OF SEQ ID NOS: 20
SEQ ID NO 2
LENGTH: 526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1080 GAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTAC 1139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTATACCACCTATGGCGAAGAA 1019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CTTAAATTTGGCGCGGGGTAAAACTATCCGTGAGGGTATGGGTCAGAGCAATAGCCCTGAT 1079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1140 AAAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAG 1199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGGGTGTGGGCACAGAAGCACTAGCA 1259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                900 AAAATGAAAAAACAAGAATATGTAAATACCTACGACCCACCAAAGGCGATAAAGTGCGC 959
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAGATTAGCAGAAAAGAATATGTTTCTATGTATGGCCCCTACTACAGGCGATAAAGTGAGA 346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             165 AAAGCGGATATTGGTATTAAAGATGCCAAAATCGCTGCCATTGGTAAAGGCGGTAACAAA 106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GACATGCAAGATGGCGTTAAAAACAATCTTAGCGTAGGTCCTGCTACTGAAGCCTTAGCC 46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 121, Application US/10793626
Publication No. US20050255478A1
GENERAL INFORMATION.
APPLICANT: KIMMERLY, WILLIAM JOHN
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
FILE REFERENCE: PUJ480US
CURRENT APPLICATION NUMBER: US/10/793,626
CURRENT PILING DATE: 1999-11-09
NUMBER OF SEQ ID NOS: 4472
SOFTWARE: PATENTIN OF: 2.1
SEQ ID NO 121
LENGTH: 309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTGGGCGATACAGACTTGATCGCTGAAGTAGAACATGACTACACCATTTATGGCGAAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     225 AAAGAAGAATTGGATCTAATCATCACTAACGCTTTAATCGTGGATTACACCGGTATTTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTTAAATTCGGTGGGGTAAAACCCTGAGAGAAGGCATGAGCCAATCCAACAACAACCTAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 216.2; DB 1; Length 526; Pred. No. 1.7e-43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GGGGAAGGTATGATTATCCGCTGGGGGAATCGATTCACACACC 1304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GGTGAAGGTTTGATCGTACTGCTGGTGTATTGACACACATC 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0; Mismatches 118;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            7.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: DNA
ORGANISM: Helicobacter pylori
US-10-834-151-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Best Local Similarity ,... Matches 287; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-793-626-121/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   096
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
```

64

Gaps

; 0

Length 336;

```
g
                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2027 CAAAGTATTATACTTGTATACTTCATTAAATAGTTTTAATATAAAATTTGCAAGACAAAT 2086
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2087 TAATATGAAAGAAGGGATAGTTTTGCACTTTACACAACGTGAACAAGACAAATTGATGAT 2146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2147 AGTTGTAGCTGCTGAGGTTGCACGTCGTAGAAAAGCAAGAGGACTTAAAACTTAAATCATCC 2206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          187 TTAACACAAGGA---GTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTT 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        244 ATATTATGCGGCGAAGTGGCTAGAAAGCGCAAAGCAGAGGCTTAAAGCTCAACC 303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 4389, Application US/10793626
Publication No. US20050255478A1
GENERAL INFORMATION:
APPLICANT: KIMMERLY, WILLIAM JOHN
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
FILE REFERENCE: PU3480US
CURRENT APPLICATION NUMBER: US/10/793,626
CURRENT PILING DATE: 1999-11-09
PRIOR FILING DATE: 1999-11-09
NUMBER OF SEQ ID NOS: 4472
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 4389
774 TTGGTGGCAGTAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAA 832
                                                185 ATTCTGGACGACGTAAAATTTATGGATTCCGTGGTTTAGTCGATGGCGATATTGACGAA 243
                                                                                                                                                                                                                                           APPLICANT: KIMMERLY, WILLIAM JOHN
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
FILL REFERENCE: PU3480US
CURRENT PAPLICATION NUMBER: US/10/793,626
PURRENT FILLING DATE: 2004-03-04
PRIOR APPLICATION NUMBER: 60/164,258
PRIOR FILLING DATE: 1999-11-09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1907 AATAITCAICATAICAATTACAITITACIAAAATAATGITTAIGTACGCIGGATAITITI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1967 CATATTTATTCAACTTTATACACTTAATTTAAAAAAACATTGTTAATTAGATAAAATTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          127 ATATTAAAAAGTTAATAAAAGTAACGAAATTAGGACTATAATCCCATTGCCTTTAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         7 ATTITICCARCACTICAAGCACATATIGAICCIGIGITGIGGGGGGGTAAAIIRCRACTIGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         OTHER INFORMATION: Description of Artificial Sequence: synthetic OTHER INFORMATION: nucleic acid sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1.6%; Score 46; DB 1; Length 2259;
48.2%; Pred. No. 0.061;
tive 1; Mismatches 166; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2207 reaagcacriecriraarcacrearear 2234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        304 CGAAGCCATTGCTTACATTAGTGCCCAT 331
                                                                                                                                                                    Sequence 4078, Application US/10793626
Publication No. US20050255478A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Local Similarity 48.2
Matches 158; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQ ID NOS: 4472
SOFTWARE: Patentin Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-793-626-4389/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; US-10-793-626-4078
                                                                                                                                                US-10-793-626-4078
                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQ ID NO 4078
LENGTH: 2259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
ò
                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ሯ
```

```
ö
                                                                                                                                                                                                                                                                                                               62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: KIMMERLY, WILLIAM JOHN
APPLICANT: KIMMERLY, WILLIAM JOHN
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
FILE REFREENCE: PU3480US
CURRENT APPLICATION NUMBER: US/10/793,626
CURRENT APPLICATION NUMBER: 60/164,258
PRIOR APPLICATION NUMBER: 60/164,258
PRIOR PILING DATE: 1999-11-09
NUMBER OF SEQ ID NOS: 4472
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 3926
LENGTH: 3927
TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 4109, Application US/10793626
Publication No. US20050255478A1
GENERAL INFORMATION:
GENERAL INFORMATION:
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
FILE REFRENCE: PUBLICATION NUMBER: US/10/793,626
CURRENT APPLICATION NUMBER: 60/164,258
PRIOR APPLICATION NUMBER: 60/164,258
NUMBER OF SEQ ID NOS: 4472
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 4109
LENGTH: 3923
                                                                                                                                                                                                                                                                                                                                                                                                                        2804 rigicarriaraarriarriariacrarraacaargarririgacgraarria 2747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3 GRAGATITICCARCACTICAAGCACATATIGAICCTGTGTTGTGGGTGGTAAATTRCRAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3 GRAGATITICCARCACTICAAGCACATATIGATCCTGTGTTGTGGGTGGTAAATIRCRAC
                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
; TYPE: DNA
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Description of Artificial Sequence: synthetic
; OTHER INFORMATION: nucleic acid sequence
US-10-793-626-4389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OTHER INFORMATION: Description of Artificial Sequence: synthetic OTHER INFORMATION: nucleic acid sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                           ö
                                                                                                                                                                        Query Match 1.4%; Score 40; DB 1; Length 3373; Best Local Similarity 56.8%; Pred. No. 2.1; Matches 67; Conservative 3; Mismatches 48; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1.4%; Score 40; DB 1; Length 3927; 56.8%; Pred. No. 2.3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             48; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                , Sequence 3926, Application US/10793626
; Publication No. US20050255478A1
; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM: Artificial Sequence FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best Local Similarity 56.83
Matches 67; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 12
US-10-793-626-4109/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-793-626-3926/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-793-626-3926
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
```

```
US-10-793-626-4033
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQ ID NO 4132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    원
                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                 2103 AATATGATACATTTTTAGTATATGACTTATTTTTTAATAAATTAAACACTCCTATTTAA 2044
                                                                                                                                                                                                                                                                                                                2043 CTGTACTACAGTCAAGATAAGAGTGCGAATAAATAGTACTTGAATAATTACTATAATTAC 1984
                                                                                                                                                                                                         53 AAATTRCRACTTGTTAATRCTATTATTAATTTTTTAATAATTACTTATTATCATATAA 112
                                                                                                                                                                                                                                                                                         113 TAATATTATTACTTATATAAAAAGTTAATAAAAAGTAACGAAATTAGGACTATAATCCC 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         322 AGCTCTGCATGGAGTTTTTTAGTACCTGAAATTTTACAACTAGATGAAGCTACTATTCAA 381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               382 TCTTTTATCGATTCTAATGATGATTTAAAACGATATGAATTCGATTTGAATTTGATTAAT 441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 2361, Application US/10793626
Publication No. US20050255478A1
GENERAL INFORMATION
TITLE OF INVENTION: WILLIAM JOHN
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
FILE REPRENCE: PU3480US
CURRENT APPLICATION NUMBER: US/10/793,626
CURRENT FILING DATE: 2004-03-04
PRIOR PLILING DATE: 1999-11-09
NUMBER OF SEQ ID NOS: 4472
SOFTWARE: Patentin Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 4033, Application US/10793626
Publication No. US20050255478A1
GENERAL INFORMATION:
APPLICANT: KINMERLY, WILLIAM JOHN
ITILE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
FILE REFRENCE: PUBLE.
CURRENT APPLICATION NUMBER: US/10/793,626
; CURRENT FILING DATE: 2004-03-04
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGCACATATTGATCCTGTGTTGTGGGTGGTAAATTRCRACTTGTTAATRCTATTAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                       ; FEATURE:
; OTHER INFORMATION: Description of Artificial Sequence: synthetic
; OTHER INFORMATION: nucleic acid sequence
US-10-793-626-4109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ) OTHER INFORMATION: Description of Artificial Sequence: synthetic; OTHER INFORMATION: nucleic acid sequence
US-10-793-626-2361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1.3%; Score 37.8; DB 1; Length 1809; ilarity 53.3%; Pred. No. 5.3; Conservative 3; Mismatches 60; Indels 0
                                                                                                                        Length 3923
                                                                                                                                                                58; Indels
                                                                                                                        Score 39.8; DB 1;
Pred. No. 2.6;
                                                                                                                                                                1; Mismatches
ORGANISM: Artificial Sequence
                                                                                                                      Query Match 1.4%;
Best Local Similarity 55.6%;
Matches 74; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: DNA ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             442 GAGAACGTCCACAT 456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAAAAGTAACGAAAT 157
                                                                                                                                                                                                                                                                                                                                                                                                               1983 ACAAGTATTATAA 1971
                                                                                                                                                                                                                                                                                                                                                                         173 ATTGCCTTTAAAA 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity
Lag 72; Conserve
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-793-626-4033/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 13
US-10-793-626-2361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQ ID NO 2361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       143
                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
```

```
ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2924 icititaicgairciaaigaigairtiaaaacgaiaigaaircgarirgaaarrgafaa 2865
                                                                                                                                                                                                                                                                                                                                                                                                                                                             2984 AGCTCTGCATGGAGTTTTTTAGTACCTGAAATTTTACAACTAGATGAAGCTACTATTCAA 2925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            509 ITTATATGITAAAGIATITCITITTAAAACTAATAAATTITATTAAAACTIGTATTA 450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            449 chaaaaarcaatrratacaarccchaaaagrcharratritrirgicatritigachaara 390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                124 CTTATATAAAAAGTTAATAAAAAGTAACGAAATTAGGACTATAATCCCATTGCCTTTAA 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 4132, Application US/10793626
Publication No. US20050255478A1
GENERAL INFORMATION.
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
FILE REPERENCE: PU3480US
FILE REPERENCE: PU3480US
CURRENT APPLICATION NUMBER: US/10/793,626
CURRENT FILING DATE: 2004-03-04
PRIOR APPLICATION NUMBER: 60/164,258
PRIOR PLING DATE: 1999-11-09
NUMBER OF SEQ ID NOS: 4472
SOFTWARE: PATENTIN VET. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                              23 AGCACATATTGATCCTGTGTTGTGGGTGGTAAATTRCRACTTGTTAATRCTATTATTAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                               OTHER INFORMATION: Description of Artificial Sequence: synthetic OTHER INFORMATION: nucleic acid sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; OTHER INFORMATION: Description of Artificial Sequence: synthetic; ; OTHER INFORMATION: nucleic acid sequence
US-10-793-626-4132
                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 2988;
                                                                                                                                                                                                                                                                                                                  Length 3591;
                                                                                                                                                                                                                                                                                                                                                                 60; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                  DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 1;
                                                                                                                                                                                                                                                                                                             Score 37.8; DB Fred. No. 7.5; 3; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1.3%; Score 37.2; Di
illarity 52.7%; Pred. No. 9.5;
Conservative 1; Minmart.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                184 AATTTAACACAAGGAGTAATAGGTGAAA 211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             389 TACTTGTCATAATGACAAATATATATA 362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Search completed: November 29, 2005, 08:13:49 Job time : 569 secs
PRIOR APPLICATION NUMBER: 60/164,258
PRIOR FILING DATE: 1999-11-09
NUMBER OF SEQ ID NOS: 4472
SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 4033
LENGTH: 3591
                                                                                                                                                                                                                                                                                                             1.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2864 GAGAACGTCCÁCAT 2850
                                                                                                                                          TYPE: DNA
ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            143 AAAAAGTAACGAAAT 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: DNA ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity 53.33
Matches 72; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-10-793-626-4132/c
```

us-09-904-994b-1.rni

```
Sequence 1, Appli
Sequence 19, Appli
Sequence 19, Appli
Sequence 19, Appli
Sequence 11, Appli
Sequence 11, Appli
Sequence 11, Appli
Sequence 11, Appli
Sequence 11, Appli
Sequence 11, Appli
Sequence 11, Appli
Sequence 12, Appli
Sequence 22, Appli
Sequence 22, Appli
Sequence 22, Appli
Sequence 22, Appli
Sequence 28, Appli
Sequence 28, Appli
Sequence 258, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 28, Appli
Sequence 28, Appli
Sequence 28, Appli
Sequence 28, Appli
Sequence 28, Appli
Sequence 28, Appli
Sequence 28, Appli
Sequence 284, Appli
Sequence 284, Appli
Sequence 284, Appli
                                                                                                                                                                                                                November 29, 2005, 00:04:09; Search time 522 Seconds (without alignments) 9817.453 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 rggragattttccarcactt......aaaaaagtagaagccacagg 2883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /cgn2 6/ptodata/1/ina/1_COMB.seq:*
/cgn2 6/ptodata/1/ina/5_COMB.seq:*
/cgn2 6/ptodata/1/ina/6_COMB.seq:*
/cgn2 6/ptodata/1/ina/6_COMB.seq:*
/cgn2 6/ptodata/1/ina/H_COMB.seq:*
/cgn2 6/ptodata/1/ina/H_COMB.seq:*
/cgn2 6/ptodata/1/ina/PCTUS_COMB.seq:*
/cgn2 6/ptodata/1/ina/PCOMB.seq:*
/cgn2 6/ptodata/1/ina/PCOMB.seq:*
/cgn2 6/ptodata/1/ina/PDCOMB.seq:*
GenCore version 5.1.6
Copyright (c) 1993 - 2005 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-08-920-095-1

US-08-446-282-19

US-08-446-248-19

US-08-446-248-19

US-09-431-705-1

US-09-431-705-1

US-09-431-705-1

US-09-643-242-8

US-08-687-645B-1

US-08-687-645B-1

US-08-687-645B-1

US-09-557-884-1

US-09-557-884-1

US-09-557-884-1

US-09-557-884-1

US-09-557-884-1

US-09-557-884-1

US-09-557-884-1

US-09-453-1018-865-1

US-09-453-1018-865-1

US-09-453-702B-57

US-09-453-702B-57

US-09-453-702B-57

US-09-453-702B-57

US-09-453-702B-57

US-09-453-702B-57

US-09-453-702B-57

US-09-453-702B-57

US-09-453-702B-57

US-09-453-702B-57

US-09-453-702B-57

US-09-453-702B-57

US-09-453-702B-57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1303057 seqs, 888780828 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                  OM nucleic - nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IDENTITY_NUC
Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Issued Patents NA:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                       US-09-904-994B-1
2883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   37.3 2735
37.3 2735
36.9 2619
36.9 2619
36.7 4824
25.6 6131
24.1 2400
23.0 1830121
23.0 1830121
23.0 1830121
23.0 83012
23.0 83012
23.0 83012
23.0 83012
23.0 83012
21.9 8753
21.9 8753
21.6 87563
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query
Match
                                                                                                                                                                                                                                                                                                                                                                           Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1062.6
1052.6
1058.6
737.6
693.4
6693.4
668.4
668.4
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
668.6
66
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Database
                                                                                                                                                                                                                            Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0 0 0 0 0
```

Sequence 3853, Ap Sequence 117, App Sequence 117, App Sequence 1186, Ap Sequence 10316, A Sequence 10546, Ap Sequence 115, Appl Sequence 15, Appl Sequence 15, Appl Sequence 16, Appl Sequence 17, Appl Sequence 10513, A Sequence 10513, A Sequence 10513, A Sequence 10513, A Sequence 113, Appl Sequence 113, Appl Sequence 113, Appl Sequence 113, Appl Sequence 111, Appl Sequence 111, Appl Sequence 111, Appl Sequence 111, Appl Sequence 111, Appl Sequence 111, Appl Sequence 111, Appl Sequence 111, Appl Sequence 111, Appl Sequence 111, Appl Sequence 111, Appl	TREASE VACCINE	DB 2; Length 2735; 267; Indels 38; Gaps
3 US-09-710-279-1853 3 US-09-710-279-117 3 US-09-134-001C-2189 3 US-09-252-991A-10316 3 US-09-602-777A-13 3 US-09-602-777A-13 3 US-09-602-777A-13 3 US-09-602-777A-13 3 US-09-602-777A-13 3 US-09-602-777A-13 3 US-09-602-777A-13 3 US-09-602-777A-13 3 US-09-602-777A-13 3 US-09-103-840A-2 3 US-09-103-840A-1 3 US-09-103-819-153 3 US-09-252-991A-10653 3 US-09-252-991A-10653 3 US-09-252-991A-1063 3	ALICNMENTS Lee et al. Latimeric, Recombinant Urease chardson P.C. street disk disk chardson P.C. Street Walses/Ms-Dos celease #1.0, Version #1.25 A: US/08/920,095 US/08/431,041 1995 TON: 30,162 BR: 30,162 BR: 30,162 BR: 30,163 1::5070 906 906 1::5070 1::51	Score 1075.2; Pred. No. 5.8e-
12 21.2 3234 6 20.1 1716 6 20.1 1702 5 20.1 1702 5 19.9 1653 7 19.1 1853 7 19.1 1853 7 19.1 1853 10.1 1853 10.1 1853 10.2 17.4 4443765 10.4 4443765 10.7 4 4443765 10.7 4 4441529 10.7 4 4441529 10.7 4 4441529 10.8 10.8 10.8 10.8 10.8 10.8 10.8 10.8	cation US, 10N: 11ON: 1	Match 37.3%; Local Similarity 66.0%; Let 1622. Conservative
25 612 26 28 6 27 578 6 28 578 6 29 578 6 31 5518 6 31 5518 6 31 5518 7 31 5	RESULT 1 US-08-920-095-1 Sequence 1, Appli Seque	Ouery Best Match

1155 CITAGORDACCACCACTINACIONACCOTAMACACTICANACCACTICANA
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
122 NAMITIANCIAGAGGAGANATIGACIGANACTICACCANAGACANGANAGITUTE 211 7.8 CACTTINGARMIGGAGGAGANATIGACITANACTICACCANAGANAGAGTHANGITANTT 197 2.2 TRYRATANGAGGAGGAGAANAGCANAGANAAAGAGCATTAACTTATT 197 3.0 CCCGAGGAGACATTACTACATAGGACACACACACACACAC

6 8 6 8 6 8 6 8 6

a

8 8 8

8 8 8 8

8 6 8 6 8

유 성 B 성

& &

us-09-904-994b-1.rni

```
요
                                                                                         쉽
                                                                                                                                                  셤
                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   d
                                                                   ò
                                                                                                                        ઠે
                                                                                                                                                                                 δ
                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
             8
                                                                                  CAAGTICTACCGGTCAAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCAACGAC 2486
                                                                                                            CAAGTGTTGCCGGTAAAATTGCAGAAATATCACTAAAAAAGACATGCAATTCAACGAC 2414
                                                                                                                                          AAAACGGCAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTC 2546
                                                                                                                                                                    2415 ACTACTGCTCACATTGAAGTCAATCCTGAAACTTACCATGTGTTCGTGGATGGCAAAGAA 2474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ě
CCGGTTTATTACAGAGAAATGTTCGCTCATCATGGTAAAGCTAAATACGATGCAAACATC 2294
                                                      ACTTTTGTGTCTCAAGCGGCTTATGACAAAGGCATTAAAGAAGAATTAGGACTTGAAAGA 2354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2547 IGCACCICTAAACCCACCICGCAAGIGCCTCTAGCCCAGCGCTACACTITCTICTAGG 2604
                                                                                                                                                                                                                            2475 GTAACTTCTAAACCAGCCAATAAAGTGAGCTTGGCGCAACTCTTTAGCATTTTCTAGG 2532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        182 AAAATTTAACACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAGTTCTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 2735
                                                                                                                                                                                                                                                                                                                        APPLICANT: Oravax, Inc.
TITLE OF INVENTION: MULTIMERIC, RECOMBINANT UREASE VACCINE
NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              37.3%; Score 1075.2; DB 6; Length 66.0%; Pred. No. 5.8e-267; ive 0; Mismatches 798; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOFTWARE: Patentin Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CLASSIFICATION:
THORMATION:
NAME: Clark, Paul T.
REGISTRATION NUMBER: 30,162
REFRERANCE/POCKET NUMBER: 06132/020001
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 542-5070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICATION NUMBER: PCT/US96/05800
FILING DATE: 23-APR-1996
CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                    E: Fish & Richardson P.C.
225 Franklin Street
                                                                                                                                                                                                                                                                                               Sequence 1, Application PC/TUS9605800 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        08/568,122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 08/431,041
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/56
FILING DATE: 06-DEC-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE: 28-APR-1995
CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TELEFAX: (617) 542-8966
INFORMATION FOR SEQ ID NO: 1
SEQUENCE CHARACTERISTICS:
LENGTH: 2735 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match 37.3
Best Local Similarity 66.0
Matches 1622; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                           COUNTRY: USA
ZIP: 02110-2804
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          linea
                                                                                                                                                                                                                                                                                                                                                                                                                Boston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                    ADDRESSEE:
STREET: 22
                                                                                                                                                                                                                                                                        RESULT 2
PCT-US96-05800-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ;
PCT-US96-05800-1
                                                                                                                                        2487
                                                                                  2427
                                                                                                            2355
                           2367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 78
                                                       2295
                                                                                                        g
                                                    셤
                                                                                                                                        ò
                                                                                                                                                                  셤
                                                                                                                                                                                                ò
                                                                                                                                                                                                                       d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 유
                           ò
                                                                                Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
```

```
GTAGAACATGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGGGTAAAACTATC 1046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCAT 1226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1227 ATGGTCGTGGGGTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGGG 1286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        975 acacaadgecarcaarcraacaaccragcaaagaagagriigaarraarrarcacr 1034
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1035 AACGCTTTAATCGTGGATTACACCGGTATTTATAAGCCGATATTGGTATTAAAGATGGC 1094
                                                                                                                                                    421
                                                                                                                                                                                                                                                                                                                                               481
                                                                                                                                                                                                                                                                                                                                                                                                     377
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        494
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              614
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          aacagaagaarcririgaarrraacgcarriggirgaraagaagaagaaagaaagaaaa 734
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               927 ACCTACGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAA 986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     855 Archargerceracraegeegaraagereacarregeegaracaearregareereaa 914
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           915 Gradaacardacraccaccarriardeccaadagcrraaarrccereccegraaacccra 974
                                             138 ciccacracecresasaarrescraaaaakescaaasaaasescarraascrraacrar 197
                                                                                                                                                                                                                                                                                     Acrecescreaarrearecaagaagescescrerrrrraaaccagarearerearer 317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTTGTAACTGTGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAA 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        cicgiaaccerecaiacceraireaceceaaresaariaarrecreereareare--- 434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    602 ACTAATGAAGGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAAC 661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGC 721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGC 781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         782 AGTAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCATAAA 841
                                                                                                         CCCGAAGCCATTGCTTACATTAGTGCCCATATTATGGACGAAGCGCGCCGTGGAAAAAA 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAAATTGCTTTACACAGAGCTAAAGAGCGTGGTTTTTCATGGCGCTAAAAGCGATGACAAC 794
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          555 Agargcciragacrirrgacagagaaaaacrircggraaacgcrirgacarrigcgagcggg
                                                                                                                                                                                                                            GGGGTGGGTAATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAA
                                                                                                                                                                                                                                                                                                                                                                                                     318 GGCGTGGCAAGCATGATCCATGAAGTGGGTATTGAAGCGATGTTTCCTGATGGGACTAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITIGGITGCGATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGGAACTTGAGGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TICTTAAAAATGAAGACATCACTATCAACGAAGGCAAAAAAGCCGTTAGCGTGAAAGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     795 TATGTAAAACAATTAAGGAGTAAGAAATGAAAAGATTAGCAGAAAAGAATATGTTTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -----ATCAAGTAAGGAGACTCCCATGAAA---ATGAAAAAACAAGAATATGTAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1047 CGTGAGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AACGCGATGATTATCGACTACACCGGGATTTACAAAGCCCGACATTGGGATTAAAAACGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1095 AAAATCGCTGGCATTGGTAAAAGGCGGTAACAAAGACATGCAAGATGGCGTTAAAAACAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            842 CATAAAGCGCTTGACAAGGCGAAATCTCACGGATTT-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      675
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         735
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1167
                                                                                                                                                                      198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1107
                                                                                                                                                                                                                                                                                           258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          662
242
                                                                                                               302
                                                                                                                                                                                                                                  362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               878
                                                                                                                                                                                                                                                                                                                                                  422
```

셤

셤

ò

8 8

ð

qq

ò

g

ò

Q

ò

g

ò

g

ઠે

g ò g ò 유 ò d ð g ð g ò g ò ద δ 임

ò

9 9

ઠે

```
USE IN THE ENCODING SAID
2487 AAAACGGCAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTC 2546
                                                                                                                                                                                                                           2415 Actacrecrescarreaagreaarcergaacrraccargrerregreregargecaaagaa 2474
                                                                                                             2547 TGCACCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCCAGCGCTACACTTTCTTCTAGG
                                                                                                                                                                                                                                                                                                                              2475 GTAACTTCTAAACCAGCCAATAAAGTGAGCTTGGCGCAACTCTTTAGCATTTTCTAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Sauerbaum, Sebastien
APPLICANT: Ferrero, Richard L.
APPLICANT: Friberge, Jean-Michael L.
APPLICANT: Thiberge, Jean-Michael L.
TITLE OF INVENTION: IMMUNOGENIC COMPOSITIONS AGAINST
TITLE OF INVENTION: COMPOSITIONS, AND NUCLEIC ACID SEQUENCES TITLE OF INVENTION: POLYPEPTIDES NUMBER OF SEQUENCES: 44
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME/KEY: misc_feature
LOCATION: 31..36
OTHER INFORMATION: /standard_name= "Shine-Dalgarno
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ADDRESSEE: Finnegan, Henderson, Farabow, Garrett
ADDRESSEE: Dunner
STREET: 1300 I Street, N.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER: IBM PC Compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME: Meyers, Kenneth J.
RECISTRATION NUMBER: 25,146
REPERBINCE, DOCKET NUMBER: 03495.0137-02000
TELECOMMUNICATION INFORMATION:
TELEPHONE: (202) 408-4000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: US/08/467,822
CLASSIPRICATION: 435
CLASSIPRICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/447,177
PILING DATE: 19-MAY-1995
CLASSIFICATION DATA:
APPLICATION NUMBER: US 08/432,697
FILING DATE: 02-MAY-1995
CLASSIFICATION: 435
APPLICATION NUMBER: US 08/432,697
FILING DATE: 02-MAY-1995
CLASSIFICATION: 435
ATTORNEY, AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Application US/08467822
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MOLECULE TYPE: DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ZIP: 20005-3315
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEFAX: (202) 408-4400
INFORMATION FOR SEQ ID NO: 1
SEQUENCE CHARACTERISTICS:
LENGTH: 2619 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Labigne, Agnes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: nucleic acid STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CITY: Washington STATE: D.C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 19, Applicat
Patent No. 5843460
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 3
US-08-467-822-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COUNTRY:
                            2295
                                                                                                                        g
                                                                                                                                                                                                                         g
                                                                                                                                                                         8
                                                                                                                                                                                                                                                                               ò
                                                                           ઠે
                                                                                                                                                                                                      ATCACTCCGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTATTCTATG 1466
                                                                                                                                                                                                                                                                                                          GAAGCGGGCGCGATTGGTTTTAAATTGCATGAAGACTGGGGCCACAACCACCAAGTGCGATC 1586
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACA 1646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GCCTACCACATTGAGGGAGCGGGGTGGAGACACTCACCTGATGTTATCACCATGGCAGGC 1766
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACTITICCACACACAGGCGCTGGCGGCGGACACGCTCCTGATATTATTAAAGTAGCCGGT 1694
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAAGAAAAGGCGATAACGACAACTTCAGGATCAAACGCTACTTGTCTAAATACACATT 2054
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AACCCCGCTTTGACCCACGCGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGATC 2186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2055 AACCCAGCGATCGCTCATGGGATTAGCGAGTATGTAGGTTCAGTAGAAGTGGGCAAAGTG 2114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2175 GGCGGATTCATTGCGTTAAGCCAAATGGGCGATGCGAACGCTTCTATCCCTACCCACAA 2234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2235 CCGGTTTATTACAGAGAAATGTTCGCTCATCATGGTAAAGCTAAATACGATGCAAACATC 2294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2367 ACTITIGITICCAAAGTCGCCTATGAAATGGCGTGAAAGAAAAAGCTGGGCTTAGAGCGC 2426
     GGAATCGATTCACACACCCACTTCCTTTCTCCCAAAATTCCCTACCGCTCTAGCCAAT 1346
                                 1215 GGTATTGACACACACATCCACTTCATTTCACCCCAACAATCCCTACAGCTTTTGCAAGC 1274
                                                                                                                                                                                                                                                     ATCACTCCAGGCAGAGAATTTAAAATGGATGCTCAGAGCGCCTGAAGAATATTCTATG 1394
                                                                                                                                                                                                                                                                                                                                                      AATITIAGGITITCITIGGCIAAAGGIAACGCITCIAACGAIGCGAGCITIAGCCGAICAAATT 1454
                                                                                                                                                                                                                                                                                                                                                                                                                                                       GAAGCCGGTGCGATTGGCTTTAAAATTCACGAAGACTGGGGCACCACTCCTTCTGCAATC 1514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GACATGGGGATTTTCTCAATCACCAGTTCTGACTCTCAAGCGATGAGGGCCGTGTGGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GAAGATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAGCTCAATATTCTACCCTCCTCCACCACCCCCCTATTCCCTATACCATTAATACGGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCAGAACACTTAGACATGCTCATGACATGCCACCACCTAGACAACGCATCCGCGAGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TTACAATTTTCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GITCAGITCGCTGATTCAAGGATCCGCCCTCAAACCATTGCGGCTGAAGACACTTTGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCCAAAATCGTGATCAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCTGACTTGGTATTGTGGAGTCCAGCATTCTTTGGCGTGAAACCCCAACATGATCATCAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCAGAGCACATGGATATGGTGTGCCACCACTTGGATAAAAGCATTAAAAGAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GGCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCACTCCCCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATC
                                                                                                                                     GGCGTTACAACCATGTTTGGAGGCGCCACAGGTCCTGTAGATGGCAAATGCGACTACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                         1455
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1587
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1647
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1575
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1707
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1635
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1767
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1827
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1755
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1875
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2067
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2307
                                                                                                     1347
                                                                                                                                                                                                      1407
                                                                                                                                                                                                                                                        1335
                                                                                                                                                                                                                                                                                                                                                      1395
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1695
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2127
  1287
                                                                                                                                                                                                                                                                                                       1467
                                                                                                                                                                                                                                                                                                                                                                                                        1527
```

```
1174
                                                                                                                                                   1166
                                                                                                                                                                    1354
                                                                                                                                                                                     1226
                                                                                                                                                                                                                                                                                                                              1466
                                                                                                                                                                                                                                                                                                                                                                                1714
                                                                                                                                                                                                                                                                                                                                                                                                  1586
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2074
                           1114
                                                                              1046
                                                                                                                1106
                                                                                                                                  1294
                                                                                                                                                                                                       1414
                                                                                                                                                                                                                       1286
                                                                                                                                                                                                                                        1474
                                                                                                                                                                                                                                                          1346
                                                                                                                                                                                                                                                                           1534
                                                                                                                                                                                                                                                                                            1406
                                                                                                                                                                                                                                                                                                                                                1654
                                                                                                                                                                                                                                                                                                                                                                  1526
                                                                                                                                                                                                                                                                                                                                                                                                                     1774
                                                                                                                                                                                                                                                                                                                                                                                                                                                       1834
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1706
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2014
                                            986
                                                                                                                                                                                                                                                                                                              1594
                                                                                                                                                                                                                                                                                                                                                                                                                                      1646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1894
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1766
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2134
                                                                          셤
                                                                                                                                              යි සි
                                                                                                                                                                                셤
                                                                                                                                                                                                                   요 양
                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                            충
음
                                                                                                                                                                                                                                                                                                                                                                                                                                                 상 원
          8 B
                                        엄
                                                      8
                                                                                             ઠે
                                                                                                           요 요
                                                                                                                                                                                                જે
                                                                                                                                                                                                                                                                     ठ
                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       $ g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ⋧
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1054 GTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCACTAACGCGA 1113
                                                                                                                                                           CGGGCAGATTGGCAGAAGGCTTGGCGCGTGGTGTGAAACTCAATTACACGGAAGCGG 148
                                                                                                                                                                                              TCGCGCTCATTAGCGGGCGTGTGATGGAAAAGGCGCGTGATGGTAATAAAAGCGTGGCGG 208
                                                                                                                                                                                                                431
                                                                                                                                                                                                                                                               GCATGATICATGAAGTGGGGATTGAAGCTAACTTCCCCGATGGAACCAAGCTTGTAACTA 328
                                                                                                                                                                                                                                                                                              TCCACACTCCGGTAGAGATAATGGCAATTAGCCCCCGGCGAGGTCTTCTTAAA---AA 385
                                                                                                                                                                                                                                                                                                                                        445
                                                                                                                                                                                                                                                                                                                                                                          505
                                                                                                                                                                                                                                                                                                                                                                                                            565
                                                                                                                                                                                                                                                                                                                                                                                                                                          491
                                                                                                                                                                                                                                                                                    551
                                                                                                                                                                                                                                                                                                                       611
                                                                                                                                                                                                                                                                                                                                                         671
                                                                                                                                                                                                                                                                                                                                                                                           731
                                                                                                                                                                                                                                                                                                                                                                                                                              791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCATAAACATAAAGCGC 851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  877
                                                                                                                         88
                                                                                                                                                                                                                                                                                                                                                                   GGGATCGTCCTGTGCAGGTGGGGATCACATTTCCACTTCTTCGAAGTGAATAAGCTCTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GTCCCACTACCGGGGATCGTGTTAGACTCGGCGACACTGATTTGATCTTAGAAGTGGAGC
                                                                                                        ACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATG
                                                                                                                         ATAAGGAGTTTAGGATGAACTAACGCCTAAAGAACTAGACAAGTTAATGCTCCATTATG
                                                                                                                                                                             TIGCTTACATTAGTGCCCATATTATGGACGAGGCGCGCGTGGAAAAAAACCGTTGCCC
                                                                                                                                                                                                                ATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTG
                                                                                                                                                                                                                                                                                    TGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGCCGAAGTGAAATTTGGTTGCC
                                                                                                                                                                                                                                                                                                                       ATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAG
                                                                                                                                                                                                                                                                                                                                      <u>Arcaggacarracrarraacgccgcaaaagcaaccarragcrrgaaaagrgaaaaraaag</u>
                                                                                                                                                                                                                                                                                                                                                         GGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCACTAA
                                                                                                                                                                                                                                                                                                                                                                                           AATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTAC
                                                                                                                                                                                                                                                                                                                                                                                                     ACTTCGATCGCGCAAAAAGCTTTTGCAAACGCCTAGACATTGCATCTGGAACAGCGGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                              GCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                rcrariescrittaattettriesriesaresceaasecearieseraaaaaereseer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TTGACAAGGCGAAATCTCACGGATTT------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TAAAACGCCCTAAAGAAAAAGTTTTGGGTCTGTAAACTGCGGTTGTGAAGCGACTAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ----ATCAAGTAAGGAGACTCCCATGAAAATGAAAAACAAGAATATGTAAATACCTACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAAC
                                                                                       Gaps
                                                                      2619;
                                                                                       41;
                                                                       Length
                                                                    Score 1062.6; DB 2; Length
Pred. No. 1e-263;
0; Mismatches 804; Indels
| PEATURE:
| PEATURE:
| PATURE:
| LOCATION: 756..759
| OTHER INFORMATION: /standard name= "Shine-Dalgarno
| US-08-467-822-19
                                                                     36.9%;
ilarity 65.5%;
Conservative (
                                                                     Query Match
Best Local Similarity
Matches 1606; Conserv
                                                                                                                                                                                                                                209
                                                                                                                                                                                                                                                                  569
                                                                                                                                                                                                                                                                                                                                                                                                            206
                                                                                                                                                                                                                                                                                                                                                                                                                              732
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      746
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        908
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         994
                                                                                                                         29
                                                                                                                                           252
                                                                                                                                                           8
                                                                                                                                                                             312
                                                                                                                                                                                              149
                                                                                                                                                                                                               372
                                                                                                                                                                                                                                                  132
                                                                                                                                                                                                                                                                                   492
                                                                                                                                                                                                                                                                                                      329
                                                                                                                                                                                                                                                                                                                       552
                                                                                                                                                                                                                                                                                                                                       386
                                                                                                                                                                                                                                                                                                                                                         612
                                                                                                                                                                                                                                                                                                                                                                          446
                                                                                                                                                                                                                                                                                                                                                                                           672
                                                                                                                                                                                                                                                                                                                                                                                                                                               999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                792
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 626
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  852
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     878
                                                                                                                      g
                                                                                                                                          à
                                                                                                                                                        셤
                                                                                                                                                                            8 6
                                                                                                                                                                                                           8 6 8 6
                                                                                                                                                                                                                                                                                  8 6 6 6
                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                        8 6 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                           8 8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6 6 6 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
```

1293 1413 1473 1533 1713 1353 1285 1593 1465 1653 1585 1773 1833 1893 1765 1953 1825 2013 2073 2133 2005 2193 TCATTGTGGACTATACGGGCATTTACAAAGCCGACATTGGGATTAAAGACGGCAAGATTG GGATGAGTCAAACCAATAGCCCTAGCTCTTATGAATTAGATTTGGTGCTCACTAACGCCC TGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGGATTAAAAACGGCAAAATCC ATGCCATTGGCAAGGCAGAAACAAGGACATGCCAAGATGGCGTAAGCCCTCATATGGTCG TGGGTGTGGGCACACACACACACAGGGAAGGTATGATTATTACCGCTGGGGAATCG ATTCACACACCACTTCCTTTCTCCACAACTTCCCTACCGCTCTAGCCAATGGCGTTA CAACCATGATTGGAGGAGGCACAGGACCTGCGGATGGCACGAATGCGACCACCATCACTC CGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGAGAAGAGTATTCTATGAATGTGG ccegaceceraarcraaaagrarerrecerecaeceaagaaracecareaarae GCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAAAAACTTGTAGAACAAGTAGAAGCGG gerritriegeraagegaargrererracgaaccererrracgegarcagarreaageag GCTTGAGCGTGGCAGATAACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATG AGGCAGGTTATGTAGATGACACCCTAAATGCAATGAACGGGCGCGCCATGCCTACC ACATTGAGGGAGGGGGGGGGAGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCA ATATTCTACCCTCCTCCACCACCACTATTCCCTATACCATTAATACGGTTGCAGAAC ACATTCTACCCGCCTCTACTAACCCGACCATTCCTTTCACCAAAAACACTGAAGCCGAGC ACTTAGACATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAAT TITCTCAAAGCCGTATCCGCCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGG GTGTGATCGCGATGACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTC CTCGAACTTGGCAGACTGCGGATAAGAATAAAAAGAATTTGGTAAGCTTCCTGAAGATG GCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTATCAACCCCG CTTTGACCCACGGCGTGAGGGTGATATCGGCTCTGTGGAAGAGGGGCAAGATCGCCGACT CAACCATGTTTGGAGGCGGCACAGGTCCTGTAGATGGCACGAATGCGACTACTATCACTC

g

ò

Š

g ò q ð g ò g ò 셤 à 임

```
269 GCATGATTCATGAAGTGGGGATTGAAGCTAACTTCCCCGATGGAACCAAGCTTGTAACTA 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          329 rccacacrccegradadgarrahrdgcaaarrhagccccccdddagdrcrrcrraaa---aa 385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                see ectriteraccegegeaggarararactericeracteriterentegecegearrandeses 625
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  rcrariescritaarrcritigariesarceceaascesarieceariesraaaaacreser 685
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    686 TAAAACGCGCTAAAGAAAAAGGTTTTGGGTCTGTAAACTGCGGTTGTGAAGCGACTAAAG 745
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CGGGCAGATTGGCAGAAGGCCTTGGCCGTGGTGTGAAACTCAATTACACCGAAGCGG 148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             149 TCGCGCTCATTAGCGGGCGTGTGATGGAAAAGGCGCGTGATGGTAATAAAAGCGTGGCGG 208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            432 ATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTG 491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      612 GGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTTTGAAGCTAACAAGGCACTAA 671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           672 AATTCGATCGTGAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTAC 731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAG 791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCATAAACATAAAGCGC 851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTTGGTTGCG 551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                552 ATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            386 Argaggacarracratraacgccggcaaagaagccarragcrigaaagrgaaaaraag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            446 GCGATCGTCCTGTGCAGGTGGGATCACATTTCCACTTCTTCGAAGTGAATAAGCTCTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            192 ACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATTATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             41;
                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 2619;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                      NAME/KEY: misc_feature
LOCATION: 31..36
COTHER INFORMATION: /standard_name= "Shine-Dalgarno
OTHER INFORMATION: sequence."
FEATURE:
NAME/KEY: misc_feature
LOCATION: 756..759
OTHER INFORMATION: /standard_name= "Shine-Dalgarno
OTHER INFORMATION: sequence."
US-08-432-697-19
                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 1062.6; DB 3;
Pred. No. 1e-263;
0; Mismatches 804;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ,0
                           TOPOLOGY: linear
MOLECULE TYPE: DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                              36.9%;
ilarity 65.5%;
Conservative
double
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity
Matches 1606; Conserv
STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             732 (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               792
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        , 979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                878
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              852
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       492
                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             윤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ሯ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 19, Application US/08432697
Patent No. 6248330
GENERAL INFORMATION:
GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
TITLE OF INVENTION:
APPLICANT:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2553
GGATCGCGCATGGGATTTCTGACTATGTGGGCTCTGTGGAAGTGGGCAAATACGCCGACC 2065
                                                                                                            2066 TCGTGCTTTGGAGTCCGGCTTTCTTTGGCATTAAGGCCCAATATGATTAAGGGCGGAT 2125
                                                                                                                                                                                                                                                                                                                                                                                                         TTTCCAAAGTCGCCTATGAAAATGGCGTGAAAGAAAGCTGGGCTTAGAGCGCCAAGTTC 2433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2126 TTATTGCGCTCTCTCAAATGGGCGATGCCAATGCGTCTATTCCCACCCCTCAGCCCGTCT
                                                                                                                                                                                                                                                                                       ATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTTTTG
                                                                                                                                                                                                                                                                                                                                             2434 TACCGGTCAAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTTCAACGACAAAACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CAAAAATCACCGTCGAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2366 CACATATTGATGTCAACCCTGAAACCTATAAGGTGAAAGTGGAAAGGGGAAAGAGGTAACCT
                                                                                                                                                                           TGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCCACTCCCCAACCGGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTAAAGCAGCAGATGAATTGAGCCTAGCGCAACTTTATAATTTGTTCTAGG 2476
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTCTAGG 2604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADDRESSEE: Finnegan, Henderson, Farabow, Garrett
ADDRESSEE: Dunner
STREET: 1300 I Street, N.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME: Meyers, Kenneth J.
REGISTRATION NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 03495.0137-00000
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEPHONE: (202) 408-4000
TELEFAX: (202) 408-4400
INFORMATION FOR SEQ ID NO: 19:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               : 2619 base pairs nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE CHARACTERISTICS:
LENGTH: 2619 base paire
TYPE: nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   D.C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 4
US-08-432-697-19
                                                         2194
                                                                                                                                                                        2254
                                                                                                                                                                                                                                                                                       2314
                                                                                                                                                                                                                                                                                                                                                2186
                                                                                                                                                                                                                                                                                                                                                                                                         2374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2494
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2306
```

```
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-46-2148-19
US-08-
                                     1946 AAGGCGATAACGACAACTTCCGCATCAAAGGCTACATCTCTAAATACACCATCAACCCG
                                                                                                                                                                                                      TCGTGCTTTCGAGTCCGGCTTTCTTTGCCATTAAGCCCCAATATGATTATTAAGGGCGGAT
                                                                                                                                                                                                                                                                                   TTATTGCGCTCTCTCAAATGGGCGATGCCAATGCGTCTATTCCCACCCCTCAGCCGTCT
                                                                                                                                                                                                                                                                                                                                                                                                                         TITCCAAAGTCGCCTATGAAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCGCCCAAGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                        CTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGATCGCCGACT
                                                                                                                                   gearcececaresarrrersacrarersescreterseaarsescaaaracseceaece
                                                                                                                                                                             TGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAAATCGTGATCAAAGGCGGTA
                                                                                                                                                                                                                                                            TGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCCACTCCCCAACCGGTTT
                                                                                                                                                                                                                                                                                                                                              ATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTTTTG
                                                                                                                                                                                                                                                                                                                                                                                 ATTACCGTGAAATGTTTGGACACCATGGGAAAAACAAATTCGACACCAATATCACTTTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TACCGGTCAAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCAACGACAAAACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTCTTAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTAAAGCAGCAGATGAATTGAGCCTAGCGCAACTTTATAATTTGTTCTAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STATE: D.C.
COUNTRY: USA
ZIP: 20005-3315
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/466,248
FILING DATE: 06-JUN-1995
CLASSIFICATION DATA:
APPLICATION 1995
CLASSIFICATION: 435
FILING DATE: 19-MAX-1995
CLASSIFICATION: 435
                    GCAAAGATAACGATAATTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 5
US-08-466-248-19
                                                                                                                                                                                                                                                                                                      2126
                                                                                                                                                                                                                                                                                                                                                                                     2186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2554
                                                                                                                                                                                                                                                                                                                                            2314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2434
                                                                                                                                         2006
                                                                                                                                                                               2194
                                                                                                                                                                                                                       2066
                                                                                                                                                                                                                                                              2254
                                                                                                                                                                                                                                                                                                                                                                                                                             2374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2494
                    2074
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2426
                    8 8 8
                                                                                                                         셤
                                                                                                                                                                     ∂
                                                                                                                                                                                                          성 음
                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                   8 6
                                                                                                                                                                                                                                                                                                                                                                                                            ∂
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1413
                                                                                                                                                                                                                                                                                   1233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1465
                                                                                                                                                                                                                               CGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTATTCTATGAATGTGG 1473
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAACAACTTGTAGAACAAGTAGAAGCGG 1533
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GCTTGAGCGTGGCAGATGGATACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATG 1653
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GCCTCAATGTCGCCGATGAATACGATGTGCCAAGTGGCTATCCACACGGATACCCTTAACG 1525
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACATTGAGGGAGGGGGGGGGGACACTCACCTGATGTTATCACCATGGCAGGCGGGGCTCA 1773
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACACTGAAGGGGCTGGGGCTGGACACGCTCCAGATGTTATCAAAATGGCAGGGGAATTTA 1645
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATATTCTACCCTCCTCCACCCCCACTATTCCCTATACCATTAATACGGTTGCAGAAC 1833
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1646 ACATTCTACCCGCCTCTACTAACCCGACCATTCCTTTCACCAAAAACACTGAAGGCCGAGC 1705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACTTAGACATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAAT 1893
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Acarogacarérraariogrericcaccacricoaraaaagrarcaaggaagargrecaga 1765
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1766 rirecceárrogagarrogecececaacraregececercaagaceaacrecargacareg 1825
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GTGTGATCGCGATGACAAGCTCGGATTCGCAAGCAATGGGGCCGTGCAGGCGAAGTGATTC 2013
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1826 ggarcrirrcrarcaccagcrccaacrcrcagcrarggacgacgraggcgaggrafica 1885
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CACGCACTTGGCAGACAGACAAAAAAAGAGTTTGGGCGCTTGAAAGAGAAA 1945
                                                                                                                    GTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCACTAACGCGA 1113
                                                                                                                                                                                                    TGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAAATCC 1173
                                                                                                                                                                                                                                                                                                                                                                                                                                                ATTCACACACCACTTCCTCCACACAATTCCCTACCGCTCTAGCCAATGGCGTTA 1353
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTTCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGG 1953
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CCGGACGCGCTAATCTAAAAGTATGTTGCGTGCAGCCGAAGAATACGCCATGAATCTAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GTCCCACTACCGGGGATCGTGTTAGACTCGGCGACACTGATTTGATCTTAGAAGTGGAGC
                                         ATGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGGGGTAAAACTATCCGTGAGG
                                                            GGATGAGTCAAACCAATAGCCCTAACCAATATAAGATTTGGTGCTCACTAACGCCC
                                                                                                                                                                                                                                                                                   1174 ATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCATATGGTCG
                                                                                                                                                                                                                                                                                                          CAGGCATTGGCAAGGCAAGAATAAGGACATGCAAGATGGCGTAGATAATCTTTGCG
                                                                                                                                                                                                                                                                                                                                                                   TGGGTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGGGGAATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CAACCATGTTTGGAGGCGCCACAGGTCCTGTAGATGCCACGAATGCGACTATCACTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCCTGAAGATG
                                                                                                                                                                                                                                                                                                                         1046
                                                                               998
                                                                                                                                                            956
                                                                                                                                                                                                                                            986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1706
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1886
                                                                                                                    1054
                                                                                                                                                                                                    1114
                                                                                                                                                                                                                                                                                                                                                                   1234
                                                                                                                                                                                                                                                                                                                                                                                                          1106
                                                                                                                                                                                                                                                                                                                                                                                                                                                1294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1414
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1654
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1586
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1774
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2014
908
                                       994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1714
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1834
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1894
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1954
                                                                                                                                                                                                                                                                                                                                                              중
음
                                     ò
                                                                  8 S
                                                                                                                                                엄
                                                                                                                                                                                                8 8
                                                                                                                                                                                                                                                                   õ
                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         음 성 음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8 &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
```

2493

2365

2553

```
1285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCCTAGATTTAGTCATCACTAACGCGA 1113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAAATCC 1173
                                                                                                                                         686 TAAAACGCGCTAAAGAAAAAGCTTTTGGGTCTGTAAACTGCGGTTGTGAAGCGACTAAAG
                                                                                                                                                                                                                                                                                                                                                                  TCATTGTGGACTATACGGGCATTTACAAAGCCGACATTGGGATTAAAGACGGCAAGATTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TAGGTCCTGCTACAGAGGCTTTGGCAGCTGAGGGCTTGATTGTAACCGCTGGTGGCATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTCACACACCCCACTTCTCCACAACAATTCCCTACCGCTCTAGCCAATGGCGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CAACCATGATTGGAGGAGGCACAGGACCTGCGGATGGCACGAATGCGACCACCATCACTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1466 GCCTCAATGTCGCCGATGAATACGATGTGCAAGTGGCTATCCACACCGATACCCTTAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATATTCTACCCTCCTCCACCACCCCCCACTATTCCCTATACCATTAATACGGTTGCAGAAC
                                                                                                                                                                                                                      GACCCACCAAAAGCCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAAC
                                                                                                                                                                                                                                                                                                    806 GTCCCACTACCGGGGATCGTGTTAGACTCGGCGACACTGATTTGATCTTAGAAGTGGAGC
                                                                                                                                                                                                                                                                                                                                             ATGACTATACCACCTATGGCGAAGAACTTAAATTTTGGCGCGGGTAAAACTATCCGTGAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1174 ATGGCATTGGCAAGGCAGGAACAAGGACATGCAAGATGGCGTAAGCCCTCATATGGTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1046 CAGGCATTGGCAAGGCAGCAATAAGGACATGCAAGATGGCGTAGATAATAATCTTTGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TGGGTGTGGGCACAGAAGCACTAGCAGGGGAAGGTATGATTATTACCGCTGGGGGAATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   <u>Anacecanaricachinarciciceccaacaanecenacheceninaeceaeceseeria</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CAACCATGTTTGGAGGCGCCACAGGTCCTGTAGATGCCACGAATGCGACTACTATCACTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTATTCTATGAATGTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1286 CCGGACGCGCTÀATCTAAAAGTATGTTGCGTGCAGCCGAAGAATACGCCATGAATCTAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAAAAAACCAACTTGTAGAACAAGTAGAAGCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1346 GCTTTTTGGCTAAGGGGAATGTGTCTTACGAACCCTCTTTACGCGATCAGATTGAAGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1406 GGGCGATTGGTTTTAAAATCCACGAAGACTGGGGAAGCACACCTGCAGCTATTCACCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACACTGAAGGGGCTGGGGGGGCACACGCTCCAGATGTTATCAAAATGGCAGGGGAATTTA
                      TGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGTAAAACATAAAGCGC
                                                             626 TCTATGGCTTTAATTCTTTGGTGGATCGCCAAGCCGATGCCGATGGTAAAAACTCGGCT
                                                                                                                                                                              TTGACAAGGCGAAATCTCACGGATTT-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1774
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1646
                                                                                                                                                                                                                                                                                                                                           994
                                                                                                                                                                                                                                                                                                                                                                                  998
                                                                                                                                                                                                                                                                                                                                                                                                                         1054
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9911
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1414
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1654
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1586
                      792
                                                                                                                                                                                                                                                               934
                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                요
                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                 ద
                                                                                                                                                                              Š
                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCATGATTCATGAAGTGGGGATTGAAGCTAACTTCCCCGATGGAACCAAGCTTGTAACTA 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATTTGATGCAAGAAGGCAGGACTTGGCTTAAAAAAGGAAATGTGATGGACGGCGTAGCAA 268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            rccacacrccggradaggaraargccaaarragccccccgggggggcrcrrcrraaa---aa 385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           505
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CGGGCAGATTGGCAGAAGGCTTGGCGCGTGTGAAACTCAATTACACCGAAGCGG 148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    redecercarradecesecererearesaaaasececercaresraaaaacereeces 208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTG 491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTTGGTTGCG 551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTAC 731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAG 791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATGAGGACATTACTATTAACGCCGGCAAAGAAGCCATTAGCTTGAAAGTGAAAATAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GGGATCGTCCTGTGCAGGTGGGGATCACATTTCCACTTCTTCGAAGTGAATAAGCTCTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATAAGGAGTTTAGGATGAACTAACGCCTAAAGAACTAGACAAGTTAATGCTCCATTATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCACTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCTTTGAACCCGGGGAAAAAAAGTGTGGAACTCATTGACATCGGCGGGAATAAGCGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gabs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 2619;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 1062.6; DB 3; Length
Pred. No. 1e-263;
0; Mismatches 804; Indels
                                                                                                                                                                                                                                                                                                                                                       NAMF/KEY: misc_feature
LOCATION: 31..36
OTHER INFORMATION: /standard_name= "Shine-Dalgarno
OTHER INFORMATION: sequence."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME/KEY: misc_feature
LOCATION: 756..756
OTHER INFORMATION: /standard_name= "Shine-Dalgarno
OTHER INFORMATION: sequence."
                              FILING DAIE: V. CLASSIFICATION: 435
ATTORNEY AGENT INFORMATION:
NAME: MEGETER KENNECH JO.
REGISTRATION NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 03495.0137-02000
TELECOMMUNICATION INFORMATION:
TELEPHONE: (202) 408-4400
TELEFAX: (202) 408-4400
INFORMATION FOR SEQ ID NO: 19:
SEQUENCE CHARACTERISTICS:
LENGTH: 2619 base pairs
TYPE: nucleic acid
            APPLING DATE: 02-MAY-1995
CLASSIETATION NUMBER: US 08/432,697
CLASSIETATION:
                                                                                                                                                                                                                                                                                                                    TOPOLOGY: linear
MOLECULE TYPE: DNA (genomic)
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity 65.5%;
Matches 1606; Conservative (
PRIOR APPLICATION DATA: APPLICATION NUMBER: 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-08-466-248-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    612
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              732
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              252
```

g

ò

g

ò

g

Š

g

ð

ò

g 8 ď ò g ò g ð g δ ద

셤

g

ઠે

ઠે

Ω

ద ઠે 셤

Š

셤 ò ď

ò

```
377 ACCCCTATTGAGGCCAATGGTAAATTAGTTCCTGGTGAGTTG---TTCTTAAAAAATGAA 433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAGATCTCCATGAAACTCACCCCAAAAGAGTTAGATAAGTTGATGCTCCACTACGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GAATTGGCTAAAAACGCAAAGAAAAAGGCATTAAGCTTAACTATGTAGAAGCAGTAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTGTGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       317 Arccardaagregerarreaagcearcrirccrearegeacraaacregraacear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTTGGTTGCGATAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAGGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GACATCACTATCAACGAAGGCAAAAAGCCGTTAGCGTGAAAGTTAAAAATGTTGGCGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCACTAAAATTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GAGTAATAGGTGAAACTCACACCCAAAGAAGAAAAAAGTTCTTGTTATATTATGCGGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 4824;
INFORMATION: includes sequences from Helicobacter pylori, INFORMATION: Salmonella typhimurium, and Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 1058.6; DB 3; Length
Pred. No. 1.4e-262;
0; Mismatches 799; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     36.7%;
Best Local Similarity 65.7%;
Matches 1606; Conservative C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (3773)...(3817)
CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (3701) ... (3769)
CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                    (2900) ... (3322)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (3326) ... (3385)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (3389) . . . (3406)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (3410)...(3466)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (3470)...(3598)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ... (3661)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (3665) . . . (3697)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (3821) ... (3844)
                                                                                                                                                                                                                                                                                                                               (2516) . . . (2692)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (3848) . . . (3889)
                                                                                                                                                                                                                                                                        (803)...(2512)
                                                                                                                                                                                                          (65) ... (29)
                                                                                                                                                                                                                                                                                                                                                                                         (2696)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (3602)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; LOCATION: (3
US-09-431-705-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LOCATION:
NAME/KEY:
LOCATION:
NAME/KEY:
LOCATION:
NAME/KEY:
LOCATION:
LOCATION:
NAME/KEY:
LOCATION:
NAME/KEY:
NAME/KEY:
NAME/KEY:
NAME/KEY:
NAME/KEY:
NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LOCATION:
NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LOCATION:
NAME/KEY:
   OTHER INFO
OTHER INFO
NAME/KEY:
LOCATION:
NAME/KEY:
LOCATION:
NAME/KEY:
                                                                                                                                                                                                       LOCATION:
NAME/KEY:
LOCATION:
NAME/KEY:
LOCATION:
NAME/KEY:
LOCATION:
NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME/KEY:
LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              377
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       497
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     494
                                                                                                                                                                                                                                                                                                                                                                                                                                                          LOCATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NAME/KEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                               GTGTGATCGCGATGACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTC 2013
                                                                                                                                                                                                                                                                                 CTCGAACTTGGCAGACTGCGGATAAGAATAAAAAGAATTTGGTAAGCTTCCTGAAGATG 2073
                                                                                                                                                                                                                                                                                                                                                                                                         2074 GCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTATCAACCCCG 2133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2134 CTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGATGGCCGACT 2193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2006 ggarcgcgcargcgarrrcrgacrargregcrcrcrgagagrgggggaarrggccgaacc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAAGGCGGTA 2253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   rcerectriceacrecectriretriceatraaceeeararararararaaceeear 2125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTATTGCGCTCTCTCAAATGGGCGATGCCAATGCGTCTATTCCCACCCCTCAGCCCGTCT 2185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTTTTG 2373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATTACCGTGAAATGTTTGGACACCATGGGAAAAACAAATTCGACACCAATATCACTTTCG 2245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITCCAAAGTCGCCTATGAAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTC 2433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2246 rericica Agoge cerra ca Agoge Agoga rea Aga Aga Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Agoga con Ago
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TACCGGTCAAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCAAGACGACAAAACGG 2493
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2306 CGCCAGTGAAAAACTGTCGCAATATCACTAAAAAGGACCTCAAATTCAACGATGTGACCG 2365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCT 2553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2366 CACATATTGATGTCAACCCTGAAACCTATAAGGTGAAAGTGGATGCCAAAGAGGTAACGT 2425
      ACTTAGACATGCTCATGACATGCCACCCACCTAGACAAACGCATCCGCGAGGATTTACAAT 1893
                                          TITCICAAAGCCGIAICCGCCCCGGCICIAICGCGGCIGAAGAIGIGCICCAIGAIAIGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCCACTCCCCAACCGGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTAAAGCAGCAGATGAATTGAGCCTAGCGCAACTTTATAATTTGTTCTAGG 2476
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTAAACCCACCTCGCAAGTGCCTTTTAGCCCAGCGCTACACTTTCTTAGG 2604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Kleanthous, Harold
APPLICANT: Londono-Arcila, Patricia
APPLICANT: Londono-Arcila, Patricia
APPLICANT: Freeman, Donna
TITLE OF INVENTION: Use of salmonella vectors for
TITLE OF INVENTION: vaccination against helicobacter infection
FILE REPERENCE: 06132/060001
CURRENT PAPLICATION NUMBER: US/09/431,705
CURRENT FILING DATE: 1999-11-01
NUMBER OF SEQ ID NOS: 52
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 1, Application US/09431705
Patent No. 6585975
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: DNA
ORGANISM: Artificial Sequence
FEATURE:
                                                                                                                                                                                                                                                                                                      1826
                                                                                                                                                                                                                                                                                                                                                                 2014
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2426
      1834
                                                                                                                          1894
                                                                                                                                                                                                                                         1954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOFTWARE:
SEQ ID NO 1
```

g

qq

ઠ

g

ð

유

ò

ò

d ð

ò

196

Gaps

38;

496 376 556

```
GGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTA 1781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 7
US-09-431-705-19
                                                                                                                     1814
                                                                                                                                                                                                                         1994
                                1782
                                                 1694
                                                                  1842
                                                                                   1754
                                                                                                    1902
                                                                                                                                      1962
                                                                                                                                                      1874
                                                                                                                                                                                       1934
                                                                                                                                                                                                         2082
                                                                                                                                                                                                                                          2142
                                                                                                                                                                                                                                                         2054
                                                                                                                                                                                                                                                                           2202
                                                                                                                                                                                                                                                                                           2114
                                                                                                                                                                                                                                                                                                            2262
                                                                                                                                                                                                                                                                                                                             2174
                                                                                                                                                                                                                                                                                                                                               2322
                                                                                                                                                                                                                                                                                                                                                               2234
                                                                                                                                                                                                                                                                                                                                                                                2382
                                                                                                                                                                                                                                                                                                                                                                                                 2294
                                                                                                                                                                                                                                                                                                                                                                                                                  2442
                                                                                                                                                                                                                                                                                                                                                                                                                                  2354
1722
             요
                                             셤
                                                             ⋧
                                                                                셤
                                                                                                    ઠ
                                                                                                                q
                                                                                                                                 જે
                                                                                                                                                 a
                                                                                                                                                                     8 8
                                                                                                                                                                                                       ò
                                                                                                                                                                                                                   Ωp
                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                       8 6
                                                                                                                                                                                                                                                                                                       õ
                                                                                                                                                                                                                                                                                                                        q
                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                             õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    $ B
                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                          1421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATT 1181
                                                                                                                                                                                                                                                                                                                     GGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGGGTGTG 1241
                                                                                                                                                                                                                                                                                                                                                      GGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGGGGGAATCGATTCACAC 1301
                                                                                                                                                                                                                                                                                                                                                                    AAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTAT 1001
                                                                                                                                                                                                                 ACCACCTATGGCGAAGAACTTAAATTTGGCGGGGTAAAACTATCCGTGAGGGTATGGGT 1061
                                                                                                                                                                                                                                                 CAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATC 1121
                                                                            856
                                                                                                                                                                                         ACAGGCGATAAAGTGAGATTGGGCGATACAGACTTGATCGCTGAAGTAGAACATGACTAC 913
                                         196
                                                                                                              884
                                                                                                                                              941
         736
                        613
                                                         673
                                                                                         GGATTTAACGCATTGGTTGATAGACAAGCAACGAAAGGAAAAAAATTGCTTTACAC 733
                                                                                                                            AGAGCTAAAGAGCGTGGTTTTCATGGCGCTAAAAGCGATGACAACTATGTAAAAACAATT 793
                                                                                                                                                                                                                                                                                                                                                                                      1302 ACCCACTTCCTTTCTCCACAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATG
1214 ATCCACTTCATTTCACCCCAACAATCCCTACAGCGTTTTGCAAGCGGTGTAACAACCATG
                                                                                                                                                       GATTACACCGGTATTTATAAAGCGGATATTGGTATTAAAGATGGCAAAATTCGCTGGCATT
                                                                                                                                                                                                                                                                                                                               TTTGGAGGGGGCACAGGTCCTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                   1274 ATTGGTGGTGGAACCGGTCCTGCTGATGGCACTAATGCGACTACTATCACTCCAGGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1334 AGAAATTTAAAATGGATGCTCAGAGCGCTGAAGAATATTCTATGAATTTAGGTTTCTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GGCAAAGGCAATAGCTCTAGCAAAAAACAACTTGTAGAACAAGTAGAAGCGGGGGGGTTT
                                                       AAGGAGACTCCCATGAAA - - - ATGAAAAAACAAGAATATGTAAAATACCTACGGACCCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                          TGGAACTTGCACCGCATGTTGCGCGCAGAGAGAGAGTATTCTATGAATGTGGGCTTTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1602 GIGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGT
                                                                          GGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCCATAAACATAAAGCGCTTGAC
        GATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATT
                        GACAGAGAAAAACTTTCGGTAAACGCTTAGACATTGCGAGGGGGGACAGCGGTAAGATTT
                                         GGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAGTGATT
                                                                                                            AAGGCGAAATCTCACGGATTT-------
                                                                                                                                                                                                                                                                                                                                                                                                                          1362
                                                                                                                                                                                                                                                                                                                                                                                                                                                          1422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1662
                                                                                                                                                                              942
                                                                                                                                                                                                                 1002
                                                                                                                                                                                                                                                 1062
                                                                                                                                                                                                                                                                                   1122
                                                                                                                                                                                                                                                                                                   1034
                                                                                                                                                                                                                                                                                                                     1182
                                                                                                                                                                                                                                                                                                                                     1094
                                                                                                                                                                                                                                                                                                                                                      1242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1542
                        554
                                                        614
                                                                                                                            734
                                                                                                                                             885
                                                                                                                                                              794
                                                                                                                                                                                                854
                                                                                                                                                                                                                                 914
                                                                         797
                                                                                           674
                                                                                                            857
                                    8 8
                                                                      6 6 6 6 6 6 6 6 6 6
                                                                                                                                                                                                                                                             g &
                                                                                                                                                                                                                                                                                              8
8
                                                                                                                                                                                                                                                                                                                                8 8
                                                                                                                                                                                                                                                                                                                                                                                 8 & 8 &
                                                                                                                                                                                                                                                                                                                                                                                                                                                    8 6 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8 6 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
        8 8
```

TCAAGGATCCGCCCTCAAACCATTGCGGCTGAAGACACTTTGCATGACATGGGGATTTTC | TTCTCTGAAATGGGCGATTCTAACGGGTCTGTGCCCACTCCCCAACGGTTTATTACCGC GTCGCCTATGAAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCGCCCAAGTTCTACCGGTC AAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCAACGACAAAAACGGCAAAAATC 1502 ACCGTCGAACACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAACCC TGGCAAACAGCTGACAAAAAAAAAAAAATTTGGCCGCTTGAAAAGAAAAAAGGCGAT CCCGCTTCCACTAACCCCACCATCCCTTTCACCGTGAATACAGAAGCAGAGCACATGGAC ATGCTCATGACATGCCACCACAAACGCATCCGCGAGGATTACAATTTTCTCAA TGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGAT AACGACAACTTCAGGATCAAACGCTACTTGTCTAAATACACCATTAACCCAGGGATGGCT TGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGTGGTC GAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAA GAAGTCAATCCTGAAACTTACCATGTGTTCGTGGATGGCAAAGAAGTAACTTCTAAAACCA CCCTCCTCCACCACCACCACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGAC AGCCGTATCCGCCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATC <u>AACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTATCAACCCCGCTTTGACC</u> CACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCCAAGATCGCCGACTTGGTGGTG Sequence 19, Application US/09431705
; Patent No. 6585975
; GENERAL INFORMATION:
; APPLICANT: Londono-Arcila, Patricia
; APPLICANT: Freeman, Donna
; TITLE OF INVENTION: Use of salmonella vectors for
; TITLE OF INVENTION: Use of salmonella vectors for
; FILE REFERENCE: 06132/060001
; CURRENT APPLICATION NUMBER: US/09/431,705 2562 ACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTAGG

```
1002 ACCACCTATGGCGAAGAACTTAAATTTGGCGGGGTAAAACTATCCGTGAGGGTATGGGT 1061
                                                                                                                                                                                                                                              AGAGCTAAAGAGCGTGGTTTTTCATGGCGCTAAAAGCGATGACAACTATGTAAAAACAATT
                                                                                                                                                                          AAGGAGACTCCCATGAAA - - - ATGAAAAAACAAGAATATGTAAAATACCTACGGACCCACC
                                                                                                                                                                                                                               AAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTAT
                                                                                                                                                                                                                                                                                                                                      1062 CAGAGCAATAGCCCTGATGAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATC
                                                                                                                                                                                                                                                                                                                                                                                                           1034 GATTACACCGGTATTTATAAAGCGGGTATTGGTATTAAAGGAGGCAAAATCGCTGGCATT
                                                                                                                                                                                                                                                                                                                                                                                                                                               GGCAAGGCAGGAAACAAGACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGGGTGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACCCACTTCCTTCCTCCACAATTCCCTACCGCTCTAGCCAATGGCGTTACAACCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1274 ATTGTTGTGTGGAACCGGTCTTGTTGTTGTTGTTGTTGTTGTTGTTATCACTATCACTCTATCAGGCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1334 AGAAATTTAAAATGGATGCTCAGAGCGGCTGAAGAATATTCTATGAATTTAGGTTTTCTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCTAAAGGTAACGCTTCTAACGATGCGAGCTTAGCCGATCAAATTGAAGCCGGTGCGATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TGTGTAGAAGACACTATGGCTGCTATTGCTGGACGCACTATGCACACTTTCCACACACTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GGAGCGGGTGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCAATATTCTA
                                                                 GGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCATAAACATAAAGCGCTTGAC
                                                                                          GGATTTAACGCATTGGTTGGTAGACAAGCAACGAAAGCAAAAAATTGCTTTACAC
                                                                                                                      --ATCAAGT
                                                                                                                                                                                                  GACTACACCGGGATTTACAAAGCCGACATTGGGGATTAAAAACGGCAAAATCCATGGCATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GGCACAGAAGCACTAGCAGGGGAAGGTATGATTATTACCGCTGGGGGAATCGATTCACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTTGGAGGGGGCACAGGTCCTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAAGTGATT
                                     GAGCCTGGCGAAGAAAATCCGTAGAATTGATTGACATTGGCGGTAACAGAAGAATCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TOGAACTTGCACCGCATGTTGCGCGCAGCAGAGAGTATTCTATGAATGTGGGGCTTTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GGCAAAGGCAATAGCTCTAGCAAAAAACAACTTGTAGAACAAGTAGAAGCGGGCGCGATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGT
                                                                                                                      AAGGCGAAATCTCACGGATTT------
                                                                                                                                                                                                                                                                                                                                                                                             1122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1454
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1514
                                        614
                                                                  797
                                                                                           674
                                                                                                                      857
                                                                                                                                                                            885
                                                                                                                                                                                                                                942
                                                                                                                                                                                                                                                                                                              914
                                                                                                                                                                                                                                                                                                                                                                  974
                                                                                                                                                                                                                                                                                                                                                                                                                                                  1182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1094
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1634
                              셤
                                                          8
                                                                                    셤
                                                                                                                    Š
                                                                                                                                          g
                                                                                                                                                                   ò
                                                                                                                                                                                              ద
                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                         ਨੇ
                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           염 장
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  중 음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GAATTGGCTAAAAAACGCAAAGAAAAGGCATTAAGCTTAACTATGTAGAAGCAGTAGCT 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  436
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  676
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     736
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GAGATCTCCATGAAACTCACCCCAAAAGAGTTAGATAAGTTGATGCTCCACTACGCTGGA 136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         317 Arccardaagrodentroaagcoarcriticordarogoacraaacrograaccorden 376
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   377 ACCCCTATTGAGGCCAATGGTAATTAGTTCCTGGTGAGTTG---TTCTTAAAAATGAA 433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGACCGGTTCAAATCGGCTCACACTTCCATTCTTTGAAGTGAATAGATGCCTAGACTTT 553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GACATCACTATCAACGAAGGCAAAAAAGCCGTTAGCGTGAAAGTTAAAAATGTTGGCGAC 493
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GTTCCCGATCTAGGAGGCCACCTTTCCTGATGGTACGAAACTTGTAACTGTGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTTGGTTGCGATAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAGGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCACTAAAATTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATGCGGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 4824;
                                                                                                         includes sequences from Helicobacter pylori, Salmonella typhimurium, and Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match 36.7%; Score 1058.6; DB 3; Best Local Similarity 65.7%; Pred. No. 1.4e-262; Matches 1606; Conservative 0; Mismatches 799;
               JS: 52
for Windows Version 4.0
CURRENT FILING DATE: 1999-11-01
NUMBER OF SEQ ID NOS: 52
SOFTWARE: FastSEQ for Windows V.
SEQ ID NO 19
                                                                    TYPE: DNA
ORGANISM: Artificial Sequence
                                                                                                                               NAME/KEY: CDS
LOCATION: (3893)...(3934)
NAME/KEY: CDS
LOCATION: (3938)...(4027)
NAME/KEY: CDS
LOCATION: (4031)...(4285)
LOCATION: (4289)...(4300)
NAME/KEY: CDS
LOCATION: (4204)...(4408)
NAME/KEY: CDS
LOCATION: (4304)...(4408)
NAME/KEY: CDS
LOCATION: (4304)...(4471)
NAME/KEY: CDS
LOCATION: (4304)...(4471)
NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                           LOCATION: (4715)...(4774)
NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                        ; LOCATION: (4784)...(4824)
US-09-431-705-19
                                                                                                                                                                                                                                                                                                                                       (4592)...(4669)
CDS
                                                                                                                                                                                                                                                                                                                                                                   (4673) ... (4711)
                                                                                           FEATURE:
OTHER INFORMATION:
OTHER INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             137
                                                                                                                                                                                                                                                                                                                                       LOCATION:
NAME/KEY:
LOCATION:
NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          497
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           494
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               377
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8 6 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8 8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         용
```

1241

1181

1001

941

1121

1361

1481

g

ઠ

셤 ò 요 Š q ò g ò 셤 δ a ò q ઠે a ò g ò 임 ò 셤 ò 원 ò 셤

ò

```
913
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAAGCTGTCGCAATGATTACATATGAAGTGCTGGAGGGGGCGCGCGGATGG---AAAAACG 493
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     733
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          793
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          853
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GAAGCCATTGCTTACATTAGTGCCCATATTATGGACGAAGCGCCGTGGAAAAAAACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               545 GGTTGCGATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GTTAAACCGGGGCGATCGACCTGTTCAGGTTGGTTCCATTTTTATTTTTTGAAGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a de consecutor de la consecució de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución del consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución de la consecución
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          377 GTAGTGGCGGCTGACTTGGCCCGCCGTGAAGAGGGGGGGCTTAAAATTAATCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gradercadrianiccaninecanecanecariceradandandandrandenade
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GITGCCGAAATGATCCCGGATATTCAAATTGAGGCAACCTTTCCTGATGGAACAAAGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GTAACTGTGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GTCACGGTTCATGACCCGATCCGTTAAATGAGGAGGACGTACGATGATACCAGGGGAGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      rcrattaaaaaaaaccrattragcaarcaaaaaaaaacaacaacaacaartaacac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           605 AATGAA----GGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    661 CAAGGCACTAAAATTCGATCGTGAAAAAGCCCTATGGCAAACGCCTAGATATTCCCTCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       rcaarcecircaarircarcereaaaaaccarrieccarecerrieaararriceecree
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 721 CAACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTTGGTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       185 ATTTAACACAAGGAGTAATAGGTGAAACTCACACAAAGAGGAGAAAAGTTCTTGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   245 TATTATGCGGGCGAAGTGGCTAGAAAGCGCAAAGCAGGGGCTTAAAGCTCAACCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GTTGCCCAGCTTATGGAAGAGTGCATGCACTTTTTGAAAAAAGATGAAGTAATGCCCGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GTGGGTAATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    63;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          25.6%; Score 737.6; DB 2; ilarity 58.3%; Pred. No. 1.1e-179; Conservative 0; Mismatches 969;
ZIP: 10016-2088

COMPUTER READABLE FORM:
MEDIUM TYPE: 3.5 inch, 0.72mb
COMPUTER: 1BM PC compatible (NEC PC-9801 RX)
OPERATING SYSTEM: MS DOS
SOFTWARE: ASCII Form
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/732,242C
FILING DATE: 19910718
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: JPN 2-210178
FILING DATE: 10-AUG-1990
ATTORNEY/AGENT INFORMATION:
WANTE CASALTING DATE: 10-AUG-1990
                                                                                                                      쫎
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME: Goodman, Herbert
REGISTRATION NUMBER: 17081
REFERENCE/DOCKET NUMBER: 91
TELECOMMUNICATION INFORMATION:
TELEPHONE: (212)972-1400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: NUCLEIC ACID
STRANDEDNESS: both
TOPOLOGY: linear
MOLECULE TYPE: DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEFAX: (212)370-1622
TELEX: 236268
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity
Matches 1442; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-07-732-242C-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   494
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  485
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        614
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          794
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                જે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ሯ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2113
                                                              1694 CCCGCTTCCACTAACCCCACCATCCCTTTCACCGTGAATACAGAAGCAGAGCACATGGAC 1753
                                                                                                                                                                                                                                                                                                                                                                   1814 TCAAGGATCCGCCCTCAAACCATTGCGGCTGAAGACACTTTGCATGACATGGGGGATTTTC 1873
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1874 rcaarcaccagricrgacrcrcaagcgargagcgrcgrcgggrgaagrrarcacragaacr 1933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CCCTCCTCCACCACCACCCCCTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGAC 1841
                                                                                                                                                                                                                  1754 Argerrargererecekeereresaraaagearraaagaagarereeerear 1813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TGGAATCCTGCCTTTTTTTGCCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGGTGGTC 2261
                                                                                                                                                   ATGCTCATGACATGCCACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2114 TGGAGTCCAGCATTCTTTGGCGTGAAACCCAACATGATCATCAAAGGCGGATTCATTGCG
                                                                                                                                                                                                                                                                                                AGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1994 AACGACAACTICAGGATCAAAACGCTACTIGTCTAAATACACCATTAACCAGGGATCGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCACTCCCCAACCGGTTTATTACCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TTAAGCCAAATGGGCGATGCGAACGCTTCTATCCCTACCCACAACCGGTTTATTACAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2234 GAAAIGTTCGCTCATCATGGTAAAGCTAAATACGATGCAAACATCACTTTTGTGTCTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GTCGCCTATGAAAATGGCGTGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTCTACCGGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2442 AAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCAACGACAAAACGGCAAAAATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2502 ACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAACCC
                                                                                                                                                                                                                                                                                                                                                                                                                                         GCGATGACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTATCAACCCCGCTTTGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGCCAAGATCGCCGACTTGGTGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2294 GCGGCTTATGACAAAGGCATTAAAGAATTAGGACTTGAAAGACAAGTGTTGCCGGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2354 AAAAATTGCAGAAATATCACTAAAAAGACATGCAATTCAACGACACTACCGCTCACATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 8, Application US/07732242C
FREEDI NO. 5298399
GENERAL INFORMATION:
APPLICANT: Uozumi, Takeshi, Masaki, Haruhiko;
APPLICANT: Hidaka, Makoto; Nakamura, Akira;
APPLICANT: Madda, Michihisa, Yoneta, Yasuo
TITLE OF INVENTION: Gene of Urease
NUMBER OF SEQUENCES: 14
CORRESSONDENCE ADDRESS:
ADDRESSEDS: Frishauf, Holtz, Goodman & Woodward, P.C.
STREET: 600 Third Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2562 ACCTOGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2474 GCCAATAAAGTGAGCTTGGCGCAACTCTTTAGCATTTTCTAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CITY: New York
STATE: New York
COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-07-732-242C-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2202
       1782
                                                                                                                                                                                                                                                                                            1902
                                                                                                                                                                                                                                                                                                                                                                                                                                         1962
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2022
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2082
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2382
```

2300

```
<u> AGATGAAAAAGCAAAGGGGAAGTTACAAGAAGACAATGGTGTGGGGAGACAACTTTCGTG</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATTCTAACGCGTCTGTGCCCACTCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCGTGAAAGAAAAGCTGGGCTTAGAGCGCCAAGTTCTACCGGTCAAAAACTGCCGTAACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         dcaircardadacagrifigadagaaaaaggigaaaccagriccarggaarricgaaarr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTC
                                                                                                                                                                            agaccarcecededadarerrracardarrradecerrrreaggarerregicie
                                                                                                                                                                                                                                                                                                                                                        AGAATAAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTGGCGTAAAACCCCAAAATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2361 ATCCCAATGCCAGCATTCCGACACCCGCAGCCGGTTTTATATCGTCCGATGTTTGCAGCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACGGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTTCCAAAGTCGCCTATGAAAATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TCACCAAGAAGACTTCAAGTTCAACGACAAAACGGCAAAAATCACCGTCGATCCGAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TAGCCCAGCGCTACACTTTCTTCTAGGCACAATGCCCCCTTTGGGGGCCAGGTTATTTAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2661 rescanciar en entrativaria de la responsación de la respecta de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de la responsación de l
ACCACCTAGACAAACGCATCCGCGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCG
                                                       GCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTGTGATCGCGATGACAAGCTCGG
                                                                                                                                                                                                                                         ATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATA
                                                                                                                                                                                                                                                                                                2061 ATTCACAGGCGATGGGGCGAGTAGGAGAGTGATCATTCGTACGTGGCAAACGGCTGACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TTAAGCGCTACATCTCCAAATACACTATCAACCCCGCTTTGACCCACGGCGTGAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       rgadacerrararreccadardacearcadacecarrecreareararreces
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATATCGGCTCTGTGGAAGAGGGCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Archegerricherakarosesakarrasersarrirasisestersekarrentri
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CATATGAAGTAAAGGTAGACGGTCAATTAGTGACATGTGAACCGGCAGAAATCGTCCCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-08-967-513-1

Sequence 1, Application US/08967513

Sequence 1, Application US/08967513

Patent No. 5783436

Patent No. 5783436

Patent No. 5783436

TITLE OF INVENTION: Mutant Urease and Method

TITLE OF INVENTION: Of Use

TITLE OF INVENTION: Of Use

TITLE OF INVENTION: Of Use

NUMBER OF SEQUENCES: 5

CORRESPONDENCE ADDRESS: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESSE: ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GAATCTTCATCAAA 2651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAAACATCACGACA 2734
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2638
         1858
                                                                                                                          1918
                                                                                                                                                                                  2001
                                                                                                                                                                                                                                            1978
                                                                                                                                                                                                                                                                                                                                                                 2038
                                                                                                                                                                                                                                                                                                                                                                                                                           2121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2098
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2721
                                              셤
                                                                                                                       8
                                                                                                                                                               원 장
                                                                                                                                                                                                                                                                                       8 & 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                             ર્જ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8 % 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       જે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              요 요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1497
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1797
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1227 ATAAAGCAGATATCGGCATAAAAGATGAATGATTGCCTCCATAGGAAAAGCGGGGAACC 1286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1287 cerrerraarogacogogreg-----ararogrearrogacoagoaacaacarara 1340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAGACTGGGGCACAACACCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACG 1617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATGTGCAAGTTTGTATCCACACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCC 1677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1881 CAACTCGACCTTATACTATCCATACTTTGGAAGAGCATTTAGATATGTTAATGGTTTGCC 1940
                                                                                                                                                                                                                                                                                                                                                                                                   TAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTATACCACCTATGGCGAAGAAC 1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                       1047 rescaesarresasarrerraresasarresasasesaeraraesaecraresaesas 1106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1107 TAAAGTTTGGCGGCGGCAAGGTGATCCGAGATGGAATGGGGCAGCATCCTTTGGCGACAA 1166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1167 GCGATGAATGCGTCGATCTCGTATTAACAATGCGATTATTGTTGATTACACAGGTATTT 1226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACAAAGCCGACATTGGGATTAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACA 1197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CCACTATTCCCTATACCATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCC 1857
                                                                                                                                                                                                                                                                                                                                  cearercreaaagcaararecegararerrregaccaacrercegegacgacarregrr 1046
                                                                                                                                                         ACATAAAGGGGTTGACAAGGCGAAATCTCACGGATTTATCAAGTAAGGAGACTCCCATGA 900
                                                                                                                                                                                                                 --ATGGATCAGTTGAAATGGGGAAAAGAAATGAGTT-------TTT 986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTCAGCAAATCGAAACCGCTCTTGCATCGGGTGTGACCACTATGATTGGCGGAGGAACAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAGTAAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCATAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CACAACAATICCCTACCGCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TOAAAGCCATAGACGTCGAGTGATTCATACCTATCATACAGAGGGCTGGCGGGGGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAATGAAAAACAAGAATATGTAAATACCTACGGACCCACCAAAGGCGATAAAGTGCGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTAAATTTGGCGCGGGTAAAACTATCCGTGAGGGTATGGGTCAGAGCAAT---AGCCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1198 AGGACATGCCAAGATGGCGTAAGCCCTCATATGGTCGTGGGGTGTGGCCACAGAAGCACTAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GTCCTGTAGATGGCACGAATGCGACTACTATCACTCCGGGCAAATGGAACTTGCACCGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGTTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTTTTTGGGCAAAGGCAATAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAGATTGGGGATCGACGGCGGCGCTATTGATACATGTTTGAAAGTGGCGGATCGATATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TAAATGCAATGAACGGGGGGGCGCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACTCACCTGATGTTATCACCATGGCAGGGGAGCTCAATATTCTACCCTCCTCCACCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1078 ATGAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTATCGACTACACCGGGATTT
                                                                                               914 TGAACGCÁÁÁGTGTATGGTTTAÁÁTAATGTAACGÁ-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1438 '
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1738
                                                                                                                                                                                                                 949
                                                                                                                                                                                                                                                                              901
                                                                                                                                                                                                                                                                                                                                        987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1558
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1761
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1821
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1798
                                       781
                                                                                                                                                                                                                                                                                                                                                                                                   961
                                    8
                                                                               g
                                                                                                                                                      ò
                                                                                                                                                                                                 q
                                                                                                                                                                                                                                                            ઠ
                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8 6 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8 6 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     के विकं
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ठ व ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  요 장
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    연
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
```

433 614

493 734 553 794 854 657

```
GTCACC-----ATCCCCATCGGCGCTGCGACGGAAGTGATCGCCGCCGAAGGAAAATT 1030
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1151 carieccaccaccaccaccicceses con a conference de carieca escases de como con contra con contra con contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1211 AGCCTGCCGGTCAATATCGGCCTGCTGGCCAAGGGAAACGTTTCTCAGCCGGATGCCCTG 1270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GTAGAACAAGTAGAAGCGGGCGCGATTGGTTTTAAATTGCATGAAGACTGGGGCACAACA 1574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1271 CGCGAGCAGGTGGCGGCAGGCGTTATTGGCCTGAAGATCCAAGAGGACTGGGGCGCCACC 1330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1331 CCGGCGGCGATCGACTGTGCGTTAACCGTCGCCGATGAAATGGACATCCAGGTCGCCCTG 1390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTTTGGGCAGAAGTAGAACATGACTATACCACCTATGGCGAAGAACTTAAATTTGGCGCG 1034
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1095 TTAGTCATCACTAACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGG 1154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTAAAAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGC 1214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1275 ATTACCGCTGGGGGAATCGATTCACACACCCACTTCCTTTCTCCACAACAATTCCCTACC 1334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1031 GTCACCGCCGGCGGGATCGATACCCCATATTCACTGGATCTGTCCGCAGCAGCGGGGAAGAG 1090
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GCTCTAGCCAATGGCGTTACAACCATGTTTGGAGGCGGCACAGGTCCTGTAGATGGCACG 1394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CCAAGTGCGATCGATCACTGCTTGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATC 1634
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GGTAAAACTATCCGTGAGGGTATGGGTCAGAGCAATAGCCCTGATGAAAACACCCTAGAT 1094
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               554 TIGAACCCGGCCAGAACGCGAGGTCGAGCTGGTGGCCTTCGCCGGTCACCGCGCCGTCT 613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ------GAGTAATATTCACGCCAG 676
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        915 GAATATGTAAATACCTACGGACCCACCAAGGCGATAAAGTGCGCTTAGGAGATACCGAT 974
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCCTATGCCGATATGTTCGGCCCCACCGTCGGCGACAAGGTGCGCCTGGCAGATACCGAG 736
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GTGAAGGACGGCCGGATCTTCGCCATCGGCAAAGCCGGCAACCCCGACATCCAGCCCAAC 976
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              494 TCGACCGTCAGCAGGCCGCCGGCTATCGCCTGAATATCCCGGCGGCGCACGGCGGTACGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTGGCATGAACGGGCTTGTGAATAACATCGCGGATGAACGCCATAAACATAAAGCGCTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          614 TCGGCTTCCGCGGCGAGGTCATGGGCCCTCTGGAGGTAAACGAT-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 creredanceaecreacearrireaccacciacescaacaceaecraaarredeceec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             crosrocreacecerrearcercearcaceaarcerraaeecceararcec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GTAAGCCCTCATATGGTCGTGGGGTGTGGGCACAGAAGCACTAGCAGGGGAAGGTATGATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AATGCGACTACTATCACTCCGGGCAAATGGAACTTGCACGGCATGTTGCGCGCAGCAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAGTATTCTATGAATGTGGGCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAAACAACTT
                                                                                377 ---AGATAGCCCTGAATACCGGCCGGGCAACCTGTCGCGTGGTCGTTGAGAACCACGGCG
                                                                                                                                                                                                                            434 ATCGGCCGATTCAGGTCGGTTCGCACTACCATTTCGCCGAGGTTAACCCCGGCGCTGAAGT
                                                                                                                                                                                                                                                                                                     TCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGCTACGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                             TTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAAAAGTGA
                  555 AAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATGAAGGGC
                                                                                                                                                      CTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCACTAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                             735
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1035
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                797
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    917
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               116
                                                                                                                                                          615
                                                                                                                                                                                                                                                                                                     675
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      658
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1335
                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                   유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                         셤
                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠ
                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               80 cecreáredeceaacerédecredeceacedecraaacreaacraratecedageecered 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              140 CCCTGATCAGCGCCTTTATTATGGAAGGCGCTCGGGACGG---CAAAAGCGTGGCCTCGC 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TGATGGAGGAGGCCGTCACGTCCTGACCCGCGAGGTGATGATGGAGGGCGTCCCGGAAA 256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAACTGTGA 494
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ricarcccedararccaedrodadeccaccricedacedecredadecredaredecredite
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGCGAAGTGAAATTTGGTTGCGATA 554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         acaaccccairrarcrgaggragggcccargarcccccgraararcacgriaaggccccgcrc 376
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           195 AGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATTATGCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 2400;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match 24.1%; Score 693.4; DB 2; Best Local Similarity 57.1%; Pred. No. 1.7e-168; Matches 1385; Conservative 0; Mismatches 971;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Modification at position 1312 to
                                                   셮
                                               inch, 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cDNA encoding mutant urease
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette, 5.25 inch, 36
MEDIUM TYPE: Storage
COMPUTER: Storage
COMPUTER: IBM Compatible
OPERATING SYSTEM: MS-DOS
SOFTWARE: Wordperfect 5.1
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/967,513
FILING DATE: 11-NOV-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequencing
                                                                                                                                                                                                                                                                                                                CLASSIFICATION: 435

PRIOR APPLICATION 1435

PRIOR APPLICATION BATA:
APPLICATION NUMBER: 0, 1996

ATTORNEY/AGENT INFORMATION:
NAME: 1an.C. McLeod
REGISTRATION NUMBER: 20, 931
REFERENCE/DOCKET NUMBER: MSU 4.1-
TELEPHONE: (517) 347-4100
TELEFHONE: (517) 347-4100
TELERAX: (517) 347-4100
TELERAX: (517) 347-4100
TELERAX: (517) 347-4100
TELERAX: (517) 347-4100
TELERAX: (517) 347-4100
TELERAX: (517) 347-4100
TELERAX: (517) 347-4100
TELERAX: (517) 347-4100
TELERAX: (517) 347-4100
TELERAX: (517) 347-4100
TELERAX: (517) 347-4103
TELERAY: (517) 347-4103
TELERAY: (517) 347-4103
TELERAY: (517) 347-4103
TELERAY: (517) 347-4103
TELERAY: (517) 347-4103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Klebsiella aerogenes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | LOCATION: Modification
| LOCATION: glutamine
| IDENTIFICATION METHOD:
| OTHER INFORMATION:
| US-08-967-513-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: nucleotides
STRANDEDNESS: Single
TOPOLOGY: Linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRAIN: CG253
INDIVIDUAL ISOLATE:
CELL TYPE: N/A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MOLECULE TYPE:
DESCRIPTION: CDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ANTI-SENSE: NO
ORIGINAL SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME/KEY:
NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     257
```

g ð g ò qq à g ò g ò g

ò

各

```
APPLICANT: Robert P. Hausinger
TITLE OF INVENTION: Mutant Urease and Method
TITLE OF INVENTION: of Use For Determination
TITLE OF INVENTION: of Urea
NUMBER OF SEQUENCES: 5
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                             COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette, 5.25 inch, 360
MEDIUM TYPE: storage
                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER: IBM Compatible
OPERATING SYSTEM: MS-DOS
SOFTWARE: Wordperfect 5.1
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/687,645B
FILING DATE: July 26, 1996
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
FILING DATE:
ATTORNEY,AGENT INFORMATION:
NAME: Ian C. McLeod
REGISTRATION NUMBER: 20,931
REFRERENCE/DOCKET NUMBER: 20,931
REFRERENCE/DOCKET NUMBER: TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                        ADDRESSEE: Ian C. McLeod
STREET: 2190 Commons Parkway
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TELEX: NO. 5846752e
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: nucleotides
STRANDEDNESS: Sin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MOLECULE TYPE:
DESCRIPTION: CDNA
                                                                                                                                                                                                                                                                                           Michigan
f: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Linear
   GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    õ
                                                                                                                                                                                                                                                               CITY: Okemos
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORIGINAL SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HYPOTHETICAL:
ANTI-SENSE: N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY:
NAME/KEY:
LOCATION: N
                                                                                                                                                                                                                                                                                                                                                     48864
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM:
                                                                                                                                                                                                                                                                                                                         COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRAIN:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      જે
                                       1451 CGCACCATCCACCTTCCATACCGAAGGGGCGGCGGCGGCCATGCGCCGGACATCATC 1510
                                                                                                                                                                                                                                                                               ACCGCCTGCGCCCACCCGCAACATTTTGCCGTCGTCCACCAACCCAACGCTGCCCTACACC 1570
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1991 ACCGTGATCAAAGGCGGCATGATCGCCCATCGCGCCGATGGGCGATATCAATGCCTCTATT 2050
                                                                                                                                                                                                                                       ACCATGGCAGGCGAGCTCAATATTCTACCCTCCTCCACCACCCCCACTATTCCCTATACC 1814
                                                                                                                                                                                                                                                                                                                                                     ATTAATACGGTTGCAGAACACTTAGACATGCTCATGACATGCCACCTAGACAAACGC 1874
                                                                                                                                                                                                                                                                                                                                                                                                                 1571 CTCAACACCATCGATGAACATCTCGATATGCTGATGGTCTGCCACCATCTGGACCCGGAC 1630
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATCCGCGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAA 1934
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1631 ATCGCCGAGGACGTGGCCTTTGCCGAGTCGCGCATTCGCCGGAAACCATCGCTGCGGAA 1690
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1691 GACGTGCTGCACGATCTCGGCGCCTTCTCGCTCACCTCCTCCGATTCGCAGGCCATGGGC 1750
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CGTGCAGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTT 2054
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1751 CGCGTCGGGGAAGTGATTCTCCGCACCTGGCAGGTGCCGATCGCATGAAGGTGCAGCGC 1810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1811 GGAGCGCTGGCGGAGGAGCCGGGGATAACGACAACTTCCGCGTGAAGCGCTACATCGCC 1870
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAATACACTATCAACCCCGCTTTGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAA 2174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1931 GTGGGTAAGCTGGCTGACCTCGTGGTCTGGTCACCAGCCTTCTTCGGCGTGAAACCGGCC 1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATCGTGATCAAAGGCGGTATGGTGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTG 2294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2295 CCCACTCCCCAACCGGTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTT 2354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2051 cceaccicecaeccearecacraceccearerriescececresecaececcear 2110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2111 cacrececercácerrecrerecreses as as construeces de contra contra con 2170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2171 AACCTGCGCAGCGCGATCGCCGTGGTGAAAGGCTGCCGTACGGTGCAGAAAGCCGACATG 2230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2475 AAGTICAACGACAAAAACGGCAAAAAICACCGICGAICCGAAAACCIICGAGGICTTIGIA 2534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2231 Grecacaacagerrecaeceraacarcacerceaececcaeaecerareaegreceegre 2290
   CACACCGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATGAACGGG 1694
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2175 GAGGGCAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAA 2234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GATGGCAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACT 2594
                                                                                                                      CGCGCCATCCATGCCTACCACATTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2291 GATGGCGAACTTATCACCAGCGGGCGGCAGACGTTCTGCCGATGGCGCAACGATATTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GGTAAGCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2595 TTCTTCTAGGCACAATGCCCCCTTT 2619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  cigirriaaggaggggargcrir
1635
                                                                                                                                                                                                                                    1755
                                                                                                                                                                                                                                                                                              1511
                                                                                                                                                                                                                                                                                                                                                        1815
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1875
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2055
                                                                                                                      1695
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2351
                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                   셤
                                                                                                                ò
                                                                                                                                                              셤
                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
```

Single

314 79 80 cecreáridaceaacericaceradeceadacriahacriaricadaarecarad CCTGATCAGCGCCTTTATTATGGAAGGCGCTCGGAACG---CAAAAGCGTGGCCTCGC 20 AAGAGAACGTTATGGAACTGACCCCCCAGAAAAAGACAAGCTGTTGCTGTTTACCGCCC 195 AGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATTATGCGG 69 Length 2400; Indels Query Match 24.1%; Score 693.4; DB 2; Best Local Similarity 57.1%; Pred. No. 1.7e-168; Matches 1385; Conservative 0; Mismatches 971; t Modification at position 1312 cDNA encoding mutant urease ; IDENTIFICATION METHOD: Sequencing; OTHER INFORMATION: : Klebsiella aerogenes CG253 INDIVIDUAL ISOLATE: CELL TYPE: N/A 140 요 ò 셤

Sequence 1, Application US/08687645B Patent No. 5846752

RESULT 10 US-08-687-645B-1

Oy 2055 GGTAAGCTTCCTGAAGATGCCAAAA 1811 GGAGCGCTGGCGAAGAAGCCGGGG Oy 2115 AAATACACTATCAACCCGCTTTG Oy 2175 GAGGCAAGATCACCCGCGCTG Oy 2175 GAGGCAAGATCGCCGACTTGGTG Oy 2175 GAGGCAAGATCGCCGACTTGGTG 1931 GTGGGTAAGCTGCTGATCACC	CTTTGGGCAGAAGTAGAACTATACCACCTATGGCGAGAGAACTTAAATTTGGCGCGCGC
Db 1631 ATCGCCGAGGACGTGGCCTTTGCC Qy 1935 GATGTGCTCCATGATATGGGTGTG Db 1691 GACGTGCTGCACGATCTCGGCGCC Qy 1995 CGTGCAGGCGAAGTGATTCCTCGA Db 1751 CGCGTCGGGGAAGTGATTCCTCGA	795 TTGGCATGAACGGCCTTGTGAATAACATCGCGGATGAACGCCTTG 854
Oy 1755 ACCATGGCGAGCTCAATATTC	ATCGGCCGATTCAGGTCGGTTCGCACTTTTCGCCGAGGTTAACCCGGCGCTGAAGT TCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATTTCCCTCTGGCAACACGCTTCGAGGTTCGACGCACGC
Db 1331 CCGGCGGCGACTGACTGTGCGTTAA Oy 1635 CACACCGATACAACTCAATGGGCA 1391 CACAGCGACACCTGAATGAGCA Oy 1695 GGGCCATCCTGAATGAATCCC	495 ATTGGCCCATCGAACCAGATGAGCACTCAAGCGGCGAACTGAAATTGGTTGG
	375 TTATGGAAGAGTGCATGCATTTTGAAAAAGATGAAGTAATGCCCGGGGTGGGT

AGACATGCTCATGACATGCCACCACCTAGACAAACGC 1874 CATCACCGTCGACGCCCAGACCTATGAGGTGCGGGTG 2290 TTTGCCGTCGTCCACCAACGCTGCCCTACACC 1570 CGAGTCGCGCATTCGCCGGGAAACCATCGCTGCGGAA 1690 CTTCTCGCTCACCTCCTCCGATTCGCAGGCCATGGGC 1750 CACCTGGCAGGTGCCATCGCATGAAGGTGCAGCGC 1810 AGATAACGATAATTTCCGCATTAAGCGCTACATCTCC 2114 GGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAA 2234 GGICTICICIGAAAIGGGCGAIICIAACGCGICIGIG 2294 odecaredecedredecedratedarecrerar 2050 CCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTT 2354 cccccardifitiecccccrcdcccccccar 2110 GCAGGCGGCAGCCAATGGCGTTGCCGAGCGGCTG 2170 GGTCAAAAACTGCGTAACATCACCAAGAAAGACTTC 2474 AATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTA 2534 scredecaaegeaaacgrrrcraeccesareccrre 1270 SAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATC 1634 | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | HILL | IGAGGGAGCGGGTGGACACTCACCTGATGTTATC 1754 sakaddededdeddeddedardedddagarchic 1510 ICTACCCTCCTCCACCACCCCCACTATTCCCTATACC 1814 ICAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAA 1934 SATCGCGATGACAAGCTCGGATTCGCAAGCAATGGGG 1994 SACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAA 2174 ACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACT 2594 FTTGGGCAAAGGCAATAGCTCTAGCAAAAAAAAATT 1514 SATTGGTTTTAAATTGCATGAAGACTGGGGCACAACA 1574 AACTTGGCAGACTGCGGATAAGAATAAAAAAAGAATTT 2054 CAAAGTCGCCTATGAAAATGGCGTGAAAGAAAAGCTG

```
483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1477
  423
                                                                                                     539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                563881
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1068
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  563821
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    563761
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      563701
                                                                                                                           셤
                                                                                                                                                                           셤
                                                                                                                                                                                                        ò
                                                                                                                                                                                                                              쉱
                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         용
                   셤
                                                   ઠે
                                                                       셤
                                                                                                    ò
                                                                                                                                                      ò
                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               564838
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    564720 GTGTAGCGGAAGTCATGCAATATGGCGCAACACTTTTAACCGTTGATGATGTCATGGAAG 564661
              2350
                                                                                                                                                                                            Rd Genome, Fragments
2291 GATGGCGAACTTATCACCAGCGAGCCGGCAGACGTTCTGCCGATGGCGAACGATTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               564897 ATAATAAATTAAGGAATGAAATATGCACTTAACTTCCAGAGAACAAGAAAAACTGATGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               564777 cagaaactratractratratraccagtcatraracaagagcagc---aagagaaggaatga
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAATTTAACACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGGAAAAAGTTCTTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CCGAAGCCATTGCTTACATTAGTGCCCATATTATGGACGAAGCGCGCCGTGGAAAAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CCGTTGCCCAGCTTATGGAAGAGTGCATGCACTTTTTGAAAAAAGATGAAGTAATGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 1830121;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                             RESULT 11
US-09-557-884-1/c
; Sequence 1, Application US/09557884
; Patent No. 650581
; GENERAL INFORMATION:
; APPLICANT: Pleischmann et al.
; TITLE OF INVENTION: The Nucleotide sequence of
; TITLE OF INVENTION: The Haemophilus influenzae F
                                                                                                                                                                                                                    STREET: 9410 Key West Avenue CIENCES, Inc. STREET: 9410 Key West Avenue CITY: Rockville STATE: MD COUNTRY: USA ZIP: 20850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   23.0%; Score 664.4; DB 3;
llarity 57.1%; Pred. No. 1.1e-159;
Conservative 1; Mismatches 1012;
                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: ASCII Text
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/557,884
FILING DATE: 25-Apr-2000
CLASSIFICATION: <UNKNOWN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME: Michelle S. Marks
REGISTRATION NUMBER: 41, 971
REFERENCE/DOCKET NUMBER: PB186P3
TELECOMMUNICATION:
TELECOMMUNICATION:
                                                                                                                                                                                                                                                                                                                                    MEDIUM TYPE: 3 1/2 inch diskette
COMPUTER: Dell Pentium
OPERATING SYSTEM: MS DOS v6.22
                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION DATA:
APPLICATION WUMBER: 08/476,102
FILING DATE: JUN-6-1995
ATTORNEY/AGENT INPORMATION:
                                    2595 ITCTICTAGGCACAATGCCCCCTTT 2619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE DESCRIPTION: SEQ ID NO: 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH: 1830121 base pairs
                                                                2351 CTGTTTTAAGGAGAGCGGATGCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TELEFAX: 301-309-8439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     INFORMATION FOR SEQ ID NO: 1
                                                                                                                                                                                                                                CORRESPONDENCE ADDRESS:
ADDRESSEE: Human G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Simil
Matches 1397; C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            363
              셤
                                       8
                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
```

```
564002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             563942
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         563822
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    563642
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         563882
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         563762
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  564361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TTTTGGGCAAAGGCAATAGCTCTAGCAAAAAACAACTTGTAGAACAAGTAGAAGCGGGCG 1536
                                                                       564660 greriegeggaangerreneaagrecagarreaageracrirecegargeeacaaaae
                                                                                                                                                                                                                                                                                                                                                                                                       564540 AATATCAATGGTGGGCTAAAGCCCCACCTACAAGGAACAAAGATATGATCCCAGGCGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  564480 ACCAATTAGCCGAAGGCGATATTCTCGCTAATGTCGGCAGAAAAACCGTAAAAATCGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  831 AACGCCATAAACATAAAGCGCTTGACAAGGCGAAATCTCACGGATTTATCAAGTAAGG--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                563941 TIGATGCTAAATTAGGCATTATCAAAGCCGATATTGGTATTCGTGATGGCGCGTATTGTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Grecaaccaccaactrcaraaccarcacrarrraarrccaacccrccrccrcarccara
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        cerraarrideregregaacregecerregregregracaeaeeaeeaeerreraeeeere
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    563641 GCGCATGCTATATGCAACCTATGTTTCAAGCGCCAGAAGCCTTGCCGCTAAACGTCGGAT
                                                                                                                                                           TIGIAACTGTGAATTGGCCCATC----GAACCAGATGAGCACTTCAAAGCGGGCGAAGTG
                                                                                                                                                                                                                                   564600 Trigitaccerecaranteanteantancemageredecritaneccanananan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GTTACTAATGAAGGGCCTAAATCCTTGC--ATGTGGGTAGCCATTTCCACTTCTTTGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ----AGATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       564420 TAACAAATTCAGGCGACCGCCCAATTCAAGTTGGCTCGCATTACCATTTTTTGAAACCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TTCCCTCTGGCAACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      564360 ATAATGCCCTTAAATTTGACCGCACTTTGGCACGTGGAATGCGCTTAAATGTTCCATCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  564300 GCAATGCGGTGCGTTTTGAACCCGGTGAAGTGAAATCAGTGGAATTAGTTGCTTTTGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  564240 GTAACCA-AATCATTATGGTTTCCATAATCAAATTGATGGCAAATTATAAGGTAGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  889 AGACTCCCATGAAAATGAAAAACAAGAATATGTAAATACCTACGGACCCAAAAGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              564181 AGÁTGGCATTAACAÁTTTCAAGÁGCGCAATATGTAGCAACTTATGGTCCAACAGTTGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              949 ATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTATACCACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----AATAGCCCTGATGAAACACCCTAGATTTAGTCATCACTAACGCGATGATTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TCGA---CTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAAATCCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCATTGGCAAGGCAGGAACAAGACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GTATTGGACAAGCAGGTAACCCTGACACCATGGATAACGTCACCAAATATGATTATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCCGCTGGGGGAATCGATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CACACACCCACTTCCTCCACAACAATTCCCTACCGCTCTAGCCAATGGCGTTACAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         cccacarricacrirrarirrerccacacacacacarricaarricaaagreecerracca
GGGTGGGTAATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAAC
                                                                                                                                                                                                                                                                                                                       AAATTTGGTTGCGATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTCTTGGTGGCAGTAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATGGCGAAGAACTTAAATTTGGCGCGGGTAAAACTATCCGTGAGGGTATGGGTCAGAGC-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CCATGITIGGAGGCGCACAGGICCIGIAGAIGGCACGAAIGCGACIACIAICACICCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CTAACAAGGCACTAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCT
```

```
564720 GTGTAGCGGAAGTCATGCAATATGGCGCAACACTTTTAACCGTTGATGATGTCATGGAAG 564661
                                                                                                                                                                                                               Hamilton O. Smith
J. Craig Venter
J. Craig Venter
INVENTION: The Nucleotide sequence of
the Haemophilus influenzae Rd Genome, Fragments
Thereof, and Uses Thereof
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         564897 ATAATAAATTAAGGAATGAAATATGCACTTAACTTCCAGAGAACAAGAAAACTGATGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  183 AAATTTAACACAAGGAGTAATAGGTGAAACTCACACCCCAAAGAGGCAAGAAAGTTCTTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  303 CCGAAGCCATTGCTTACATTAGTGCCCATATTATGGACGAAGCGCGCCGTGGAAAAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 cagaaacrarrecrrararrecragrearraracaagagege---aagagaaggaarga
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                36;
  562507 AACCAGTGGATAGCGTACCATTGGGTCAGCGATATTTCCTATTCTA 562462
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 664.4; DB 3;
Pred. No. 1.1e-159;
1; Mismatches 1012;
                                                                                                                                                                                                                                                                                                                                    ADDRESSEE: Human Genome Sciences, Inc. STREET: 9410 Key West Avenue CITY: Rockville, STATE: MD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SOFTWARE: ASCII Text
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/643,990A
FILING DATE: 23-Aug-2000
CLASSIFICATION: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE/DOCKET NUMBER: PB186P1C1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDIUM TYPE: 3 1/2 inch diskette
COMPUTER: Dell Pentium
OPERATING SYSTEM: MS DOS v6.22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FILING DATE: 1995-06-07
APPLICATION NUMBER: 08/426,787
FILING DATE: 1995-04-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TOPOLOGY: linear
SEQUENCE DESCRIPTION: SEQ ID NO: 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER: 08/487,429
                                                                                                                                                    APPLICANT: Robert D. Fleischmann
Mark D. Adams
Owen White
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REGISTRATION NUMBER: 40,302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGTH: 1830121 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TELECOMMUNICATION INFORMATION:
                                                      RESULT 12
US-09-643-990A-1/c
; Sequence 1, Application US/09643990A
; Patent No. 6528289
; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELEPHONE: 301-610-5790
TELEFAX: 310-309-8439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME: Kenley K. Hoover
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 23.0%;
Best Local Similarity 57.1%;
Matches 1397; Conservative 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                      ZIP: 20850
COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                      COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-643-990A-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        564837
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           원
셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           562868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        563102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     563042
                  TTTTTGGTAAAGGCAACTGTTCAACCCTAGATCCTCTGCGTGAGCAAATTGAAGCGGGTG 563522
                                                                                                                                                                                                                                                                                              TTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCAATA 1776
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2316
                                                                                                                                    TGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATGAGG 1656
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CCAAAGTCGCCTATGAAAATGGCGTGAAAAGAAAGCTGGGCTTAGAGCGCCAAGTTCTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTGTGAAAGGCTGCCGCAACGTAAAAAAAAAAACATCTGGTTCATAATGATGTAACACCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTA
                                                                                     TAGACATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAATTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           recararerrearecrarecrarearracaraacecerececaaaeaerracerracer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ccgaradecerrarecerenaaacearrecaecaeaaararrrecareararadeece
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TCTTCTCCATTATGAGTTCAGACTCTCAAGCGATGGGACGTATTGGCGAAGTCGTTATTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -----aacgaraacriccgraffaaacgarararcgcgaaaracaccafcaaccagcaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Trecacardentrecesascaratrescricerracaagressraaarcscagararcs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCACTCCCCAACCGGTTTATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TAGCTATGCGAAAATGGGCGATCCAAATGCCTCAATTCCAACACCGCAACCTGTATTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    acartracretrearecreaacerrareaacirceaciecacecacacacarraarraccrere
                                                                                                                                                                                                                                                   563341 CGGAGGCGCAGGTGGTGTGTATGCACCTGACATTAAAGCAGCAGCGATGTATTCAAACG
                                                                                                                                                                                                                                                                                                                                                                                                                TATTACCTGCTTCAACCAACCGACTCGTCGTTTACCAAAACACATTGATGAACATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GAACTTGGCAGACTGCGGATAAGAATAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GTACATGCCAAACTGCAGATAAGATGAAATGCAACGTGGGTGAGCTAGGTAATGAAGGA-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGCCAAGATCGCCGACTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCCAGCATCACTTTTGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Accerccaareracerccacaaecerraccaaccecacaacaecagrarrerrrerrr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CACAAGCCGCTGAAAAGCTGATATTCGTGCGAAGTTCGGTTTACACAAAGAAACCATTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CGGTCAAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCAACGACAAAACGGCAA
                                                        Taaaagtagcagatgaaatgaatattcaagtggccattcacacagacacgctaaatgaaa
                                                                                                                                                                                                                                                                                                                                                                         TTCTACCCTCCTCCACCACCACTATTCCCTATACCATTAATACGGTTGCAGAACACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCCAAATACACTATCAACCCCCGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TGATCGCGATGACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTCTA 2602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2017
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2377
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2497
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2557
                                                        1537
                                                                                                                                    1597
                                                                                                                                                                                                                                                                                                                                                                         1777
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1897
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2077
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2197
                                                                                                                                                                                                                 1657
                                                                                                                                                                                                                                                                                            1717
                                                                                                                                                                                                                                                                                                                                                                                                              563281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        563161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     563101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                563041
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              562982
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           562927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   562807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              562747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             562687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           562627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      562567
                                                                                                                                                                        563461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           563221
                                                                                                                                                                    d
                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                          ⋩
                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                       g
                                                                                                                               ò
                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                         ò
                                                    8
```

1477 TTT 563581 TTT	1537 CGA 	1597 TGAC 563461 TAA	1657 CAGG 563401 GTGG				1897 CTC	1957 TGAT 563101 TCTT	2017 GAA(563041 GTA(2077 AAG	2137 TGAG 562927 TTG				2377 CCA 	2437 CGG 562627 CTG	2497 AAA 	
& 8	ò a	\dot{\dot{\dot{\dot{\dot{\dot{\dot{	Š a	à à	· & 8	දු පු	ර් දි	oy Op	oy Dp	සි ර	λο q	à a	장 옵 (ð 8	& 8 8	è 8	\$ B \$	•
GGGTGGGTAATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAAC	564660 GTGTGGGGGAAATGGTTCATGAAGTCCAGATTGAAGCTACTTTCCCCGATGGCACGAAAC 564601 483 TTGTAACTGTGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGGGAAGTG 538 	TIGITACCGIGCATAATCCAATCAGATAACCGWAGGGTGGGCTTTAGCCCACAAAATAAA AAATTIGGTIGCGATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGACTIGAG 	564540 AATATCAATGGGGGTAAAGCCCACCCTACAAGGAACAAGATATGATGCCCAGGCGAAT 564481 599 GTTACTAATGAAGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAG 656	564480 ACCAATTAGCCGAAGGCGTATTCTCGCTAATGTCGGCAGAAAAACCGTAAAAATCGAAG 564421 657 CTAACAAGGCACTAAAATTCGATGGAAAAGCCTATGGCAAACGCCTAGATA 710	TAACAÀATTÁAGGGACGÉCCAATTCÀAGTTGGCTCGCATTACTTTTGAÀACCA TTCCCTCTGGCAACACGCTTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTC	564360 ATAATGCCCTTAAATTTGACCGCACTTTGGCACGGGAATGCGCTTAAATGTTCCATCTG 564301 771 CTCTTGGTGGCAGTAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATGGGGATG 830 771 CTCTTGGTGGCGGTAAAAGTGATTGGCATGAAAGTGAAATCAGTGGAATTAGTTGCTTTTGGTG 564241 564300 GCAATGCGGTGTTTTGAACCCGGTGAAATCAGTGGAATTAGTTGCTTTTGGTG 564241	831 AACGCCATAAACATAAAGCGCTTGACAAGGCGAAATCTCACGGATTTATCAAGTAAGG 888		Se4181 AGATGGCATTAACAATTTCAAGAGCGCAATATGTAGCAACTTATGGTCCAACAGTGGCG SS4122 Se49 ATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAACTATACACTATACACCT 1008 	ATGCCAAGAACTTAAATTTGCCGCGGTAAAACTATCCGTGAGGGTTTGGGTCAGAGG- 	AATAGCCCTGATGAAACACCCTAGATTTAGTCATCACTAACGCGATGATTA	TCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAACGGCAAAATCCATG	1177 GCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGG 1236	1237 GTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGGGGGAATCGATT 1296	CACACACCCACTTCCTTTCTCCCACAAATTCCCTACCGCTCTAGCCAATGGCGTTACAA	CCATGITTGGAGGGGCACAGGTCCTGTAGAGGCACGAATGCGACTACTATCACTCCGG	GCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAAAGAGTATTCTATGAATGTGGGCT	
ò	d y	원 장	d S	g &	음 <i>장</i>	g & g	કે દ	8 & 1	8 8 8	8 6	કે ઇ	8 8 8	දු දු	상 점	8 8	8 8	2	

563162 563102 563042 562983 562928 562868 562808 562748 562688 562628 arracretricaricerga actriar ga a certra de a cerca de a cerca de a cerca de a cerca de a cerca de a cerca de a 1836 2016 BAGGAGCGGGTCGAGACACTCACTGATGTTATCACCATGGCAGGCGAGCTCAATA 1776 ACATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAATTTT 1896 2136 TTGGGCAAAAGGCAATAGCTCTAGCAAAAAAAACTTTGTAGAACAAGTAGAAGCGGGCC AGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATGAGG CTTGGCAGACTGCGGATAAGAATAAAAAGAATTTGGTAAGCTTCCTGAAGATGGCA ---AACGATAACTICCGTATTAAACGATATATGGGGAAATACACCATCAACCAGGAA TACCCTCCTCCACCACCCCCACTATTCCCTATACCATTAATACGGTTGCAGAACACT PAAGCCGTATCCGCCCCCGGCTCTATCGCGCTGAAGATGTGCTCCATGATATGGGTG **ATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTATCAACCCCGCTT** FIGIGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGG FICTICTGAAATGGGCGATTCTAACGCGTCTGTGCCCACTCCCCAACCGGTTATT GCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTT hageceergaaaagereararregreegaaerreegrriaeaaaaaaaacarre ATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTA ATCGCGATGACAAGCTCGGATTCGCCAATGGGGCGTGCAGGCGAAGTGATTCCTC AAAGTCGCCTATGAAAATGGCGTGAAAGAAAAGAAAGCTGGGCCTTAGAGCGCCCAAGTTCTAC TCAAAAACTGCCGTAACATCACCAAGAAAGACTTCAAGTTCAACGACAAAACGGCAA 2557 AACCCACCTCGCAAGTGCCTCTAGCCCCAGCGCTACACTTTCTTCTA 2602

```
מ
                                                                                                                                                                                                                                                                                                                                    מ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                b
                                                                                                                                                                                    p
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME/KEY: misc feature
LOCATION: (119924)..(119924)
OTHER INFORMATION: n equals a,t,c, or
                                                                                                                                                                                                                                                                                            NAME/KEY: misc feature
LOCATION: (51602)..(51602)
OTHER INFORMATION: n equals a,t,c, or
                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURE:
NAME/KEX: misc feature
NACATION: (51805)..(51805)
OTHER INFORMATION: n equals a,t,c, or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME/KEY: misc feature
LOCATION: (55369)..(55369)
OTHER INFORMATION: n equals a,t,c, or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NAME/KEY: misc feature
LOCATION: (65309)..(65309)
JTHER INFORMATION: n equals a,t,c, or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     o
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                             FEATURE:
NAME/KEX: misc_feature
LOCATION: (47036) ..(47036)
OTHER INFORMATION: n equals a,t,c, or
                                                                                                                                                                                                                                                                                                                                                                NAME/KEY: misc feature
LOCATION: (51786)..(51786)
OTHER INFORMATION: n equals a,t,c, or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LOCATION: (65313)..(65313)
OTHER INFORMATION: n equals a,t,c, or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             or
                  LOCATION: (45593)..(45593)
OTHER INFORMATION: n equals a,t,c, or
                                                                                                                                                                                                                    NAME/KEY: misc feature
LOCATION: (51334)..(51334)
OTHER INFORMATION: n equals a,t,c, or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME/KEY: misc feature
LOCATION: (80024)..(80024)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME/KEY: misc feature
LOCATION: (100091)..(100091)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME/KEY: misc feature
LOCATION: (105121)..(105121)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME/KEY: misc feature
LOCATION: (107248)..(107248)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME/KEY: misc feature
LOCATION: (117136)..(117136)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME/KEY: misc feature
LOCATION: (119750)..(119750)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a,t,c,
                                                                      NAME/KEY: misc feature
LOCATION: (45732)..(45732)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME/KEY: misc feature
LOCATION: (102696)..(102696)
OTHER INFORMATION: n equals
   NAME/KEY: misc_feature
LOCATION: (45593)..(459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY: misc feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURE:
NAME/KEY: misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEATURE:
                                                                                   562507 AACCAGTGGATAGCGTACCATTGGGTATTTCCTATTCTA 562462
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY: misc_feature
LOCATION: (44975)..(44975)
OTHER INFORMATION: n equals a,t,c, or g
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: DNA
ORGANISM: Haemophilus influenzae
FEATURE:
NAME/KEY: misc feature
LOCATION: (4747)...(4747)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME/KEY: misc feature
LOCATION: (36543)..(36543)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: misc feature
LOCATION: (36551)..(36551)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY: misc_feature
LOCATION: (444<u>16</u>)..(44416)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURE:
NAME/KEY: misc feature
LOCATION: (9921)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME/KEY: misc feature
LOCATION: (10150)..(10150)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME/KEY: misc_feature
LOCATION: (36636)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURE:
NAME/KEY: misc_feature
LOCATION: (40808)..(40810)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY: misc_feature
LOCATION: (44905).. (44905)
OTHER INFORMATION: n equals a,t,c,
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME/KEY: misc feature
LOCATION: (29298)..(29298)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH: 1830121
                  g
```

```
564600 ricrraccerecarancearicagaraacegwaggerecerrragcecaraaaraaa 564541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    563761 CCCACATTCACTTTATTTTGTCCACAACAACATGCAATTGAAAGTGGCGTTACCA 563702
                                   564777 cagajacnajriecrianarisecraencarrandaseaseseses ---aagagaaggaanga 564721
                                                                                                             564720 grgiadcegaagrcardcaararagcegaacacririraaccerrdargargrcardgaag 564661
                                                                                                                                                                                       564660 ereregegaareerreargagreeagarreaageeraerriceeegareeeagaae 564601
                                                                                                                                                                                                                                                                                                                                         564540 AATATCAATGGTGGGCTAAAGGCCCACCTACAAGGACAAAGATATGATCCCAGGGGAAT 564481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               564420 TAACAAATTCAGGCGACCGCCCAATTCAAGTTGGCTCGCATTACCATTTTTTTGAAACCA 564361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1357 CCATGTTTGGAGGCGGCACAGGTCCTGTAGATGGCACGAATGCGACTACTATCACTCCGG 1416
                                                                                                                                                                                                                            TIGIAACIGIGAATIGGCCCAIC----GAACCAGAIGAGCACTICAAAGCGGGCGAAGIG
CCGAAGCCATTGCTTACATTAGTGCCCATATTATGGACGAAGCGCCCGTGGAAAAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                   564480 ACCAATTAGCCGAAGGCGATATTCTCGCTAATGTCGGCAGAAAACCGTAAAAATCGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 564300 GCAATGCGGTGCGTTTTGAACCCGGTGAAGTGAAATCAGTGGAATTAGTTGCTTTTGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ĠriccaaĠcacĠaaĠrricaraacĠĠriccacarriraarrigcaaccĠcricĠricĠrarcara
                                                                                                                                                      GGGTGGGTAATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAAC
                                                                                                                                                                                                                                                                                                      AAATTTGGTTGCGATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TTCCCTCTGGCAACACGCTACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       564360 ATAATGCCCTTAAATTTGACCGCACTTTGGCACGTGGAATGCGCTTAAATGTTCCATCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         949 ATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGTAGAACATGACTATACCACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TCGA---CTACACCGGGATTTACAAAGCCGACATTGGGATTAAAAAACGGCAAAATCCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ĠTAİTİĞĞACAAĞÇAĞĞTAAÇCCTĞAÇACATGĞATAAÇĞTÇAÇĞAAATATĞATTATÇĞ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CACACACCACTTCCTTTCTCCACAACAATTCCCTACCGGTCTAGCCAATGGCGTTACAA
                                                                           GTTACTAATGAAGGCCCTAAATCCTTGC--ATGTGGGTAGCCATTTCCACTTCTTTGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTAACAAGGCACTAAAATTCGATCGTGAAAAAGCCCTATGGCAAACGCCT-----AGATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CTCTTGGTGGCAGTAAAAAGTGATTGGCATGAACGGGCTTGTGAATAACATCGCGGATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      831 AACGCCATAAACATAAAGCGCTTCACAAGGCGAAATCTCACGGATTTATCAAGTAAGG--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           564240 GTAACCA-AATCATTATGGTTTCCATAATCAAATTGATGGCAAATTATAAGGTAGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  889 AGACTCCCATGAAAATGAAAAACAAGAATATGTAAATACCTACGGACCCACCAAAGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1009 ATGGCGAAGAACTTAAATTTGGCGCGGGTAAAACTATCCGTGAGGGTATGGGTCAGAGC-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -----AATAGCCCTGATGAAAACACCCTAGATTTAGTCATCACTAACGCGATGATTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAGCCCTCATATGGTCGTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GTGTGGGCACAGAAGCACTAGCAGGGAAGGTATGATTATTACCGCTGGGGAATCGATT
                                                                               363
                                                                                                                                                                                                                                                                                                                                                                                  599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                771
   303
                                                                                                                                                      423
                                                                                                                                                                                                                                483
                                                                                                                                                                                                                                                                                                          539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1068
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     563881
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               563821
                                     셤
                                                                           ò
                                                                                                             셤
                                                                                                                                                      8
                                                                                                                                                                                         g
                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           564837 TTTTCCTCGCGGCGAACTTGCGGCAAAACGCAAAAGCACGCGGGTTAAATTAAACTATC 564778
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 564897 ATAATAAATTAAGGAATGAAATATGCACTTAACTTCCAGAGAACAAGAAAAACTGATGC 564838
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAATTTTAACACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGGAAAAAGTTCTTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 1830121;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 664.4; DB 3;
Pred. No. 1.1e-159;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1; Mismatches 1012;
                                                                                                   b
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              or
                         ö
                                                                                                   ö
                                                                                                                                                                           or
                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                        NAME/KEY: misc_feature
LOCATION: (121344)..(121344)
OTHER HFORMATION: n equals a,t,c,
FEATURE:
                                                                                                                                                                                                                                                                                  NAME/KEY: misc feature
LOCATION: (131340)..(131340)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY: misc feature
LOCATION: (142750)..(142750)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME/KEY: misc feature
LOCATION: (147<u>1</u>97)...(147197)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME/KEY: misc feature
LOCATION: (150841)..(150841)
OTHER INFORMATION: n equals a,t,c,
                     INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME/KEY: misc feature
LOCATION: (145942)..(145942)
OTHER INFORMATION: n equals a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a,t,c,
                                                                                                                                                                           a,t,c,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ΰ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a,t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match 23.0%;
Best Local Similarity 57.1%;
Matches 1397; Conservative
                                                                                                                                NAME/KEY: misc feature
LOCATION: (122167)..(122167)
OTHER INFORMATION: n equals
                                                                                                                                                                                                          NAME/KEY: misc feature
LOCATION: (122336)..(122336)
OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME/KEY: misc feature
LOCATION: (140398)..(140398)
OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                              NAME/KEY: misc feature
LOCATION: (131360)..(131360)
OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: misc feature
LOCATION: (139910)..(139910)
OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME/KEY: misc feature
LOCATION: (145058)..(145058)
OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CEY: misc_feature
ION: (145171)..(145171)
INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME/KEY: misc feature
LOCATION: (152500)..(152500)
OTHER INFORMATION: n equals
   (120038)..(120038)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME/KEY: misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURE:
NAME/KEY:
LOCATION:
                                                                                                                                                                                           FEATURE:
NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEATURE:
NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURE:
NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURE:
NAME/KEY:
                                                                                                                                                                                                                                                                                                                                             FEATURE:
NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     THER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     d
```

564002

564241

563942

```
562627 CTGTGAAAGGCTGCCGCAACGTAGGTAAAAAGATCTGGTTCATAATGATGTAACACCAA 562568
                                                                                                                                                            562567 ACATTACTGTTGATGCTGAACGTTATGAAGTTCGAGTGGACGGAGAGTTAATTACCTGTG 562508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Craig A. Rosen
Steven C. Barash
Michael R. Fannon
TITLE OF INVENTION: Staphylococcus aureus Polynucleotides and Sequences
NUMBER OF SEQUENCES: 5256
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Tractrostratora ca a cantra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra dela contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra dela contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra del contra de la contra de la contra del contra de la contra de la contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della contra della con
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTAAAAAGTTAATAAAAGTAACGAAATTAGGACTATAATCCCATTGCCTTTAAAATTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4148 recrircaararcegarargeraaaaararaarrrrrraarracacarreaacrrrerara
                                                                              2497 AAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGGCAAACTCTGCACCTCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       59;
                                                                                                                                                                                                                                                                                                                s62507 AACCAGTGGATAGCGTACCATTGGGTCAGCGATATTTCCTATTCTA 562462
                                                                                                                                                                                                                                      AACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTTA 2602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COUNTRY: USA
ZIP: 20850
COMPUTER: DESCRIPTION OF THE COMPUTER: DISKELTE, 3.50 inch, 1.4MD storage COMPUTER: HP Vectra 486/33
OPERATING SYSTEM: MSDOS Version 6.2
SOFTWARE: ASCII Text
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 662.8; DB 3;
Pred. No. 2.1e-160;
1; Mismatches 1093;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ADDRESSEE: Human Genome Sciences, Inc. STREET: 9410 Key West Avenue CITY: Rockville STATE: Maryland
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: US/08/956,171E
FILING DATE: 20-Oct-1997
CLASSIFICATION: <UNKNOWN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE/DOCKET NUMBER: PB248P1
TELECOMMUNICATION :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; SEQUENCE DESCRIPTION: SEQ ID NO: 22: US-08-956-171E-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FILING DATE: January 5, 1996
APPLICATION NUMBER: 08/781,986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: 60/009,861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FILING DATE: January 3, 1997
ATTORNEY/AGENT INFORMATION:
NAME: Mark J. Hyman
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REGISTRATION NUMBER: 46,789
                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 14
US-08-956-171E-22/c
; Sequence 22, Application US/08956171E
; Patent No. 6593114
; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEPHONE: (240) 314-1224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Patrick S. Dillon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TELEFAX: (301) 309-8439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LENGTH: 5966 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Charles Kunsch
Gil H. Choi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                INFORMATION FOR SEQ ID NO: 22:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         23.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local Similarity
Matches 1437; Conserval
                                                                                                                                                                                                                                          2557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4088
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                                d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ਨੇ
                                                                              ò
                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  562687 CACAAGCCGCTGAAAAGCTGATATTCGTGCGAAGTTCGGTTTACACAAAGAAACCATTG 562628
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    563042
563162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           563102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                563041 GTACATGGCAAACTGCAGATAAGATGAAAATGCAACGTGGTGAGCTAGGTAATGAAGGA- 562983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          grederitritedaadacacardaaadedarreardaadacacacteritearactritedara 563342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ceaadedececaderecrearecacereacereareareareaseseseseseseseseses
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       563222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CCAAAGTCGCCTATGAAAATGGCGTGAAAGAAAGCTGGGCTTAGAGCGCCAAGTTCTAC 2436
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CGGTCAAAAACTGCCGTAACATCACCAAGAAGACTTCAAGTTCAACGACAAAACGGCAA 2496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TTGAGGGAGCGGGTGGAGGACACTCACCTGATGTTATCACCATGGCAGGCGAGCTCAATA 1776
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ----aacgataacttccgtattaaacgatatatcgcgaaatacaccatcaac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               563221 TGGATATGTTGATGGTTTGCCATCACTTAGATAAACGCGTGCCGGAAGACGTAGCTTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TGACCCACGGCGTGAGCGAGTATATCGGCTCTGTGGAAGAGGGCAAGATCGCCGACTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGAGCGTGGCAGATGAATACGATGTGCAAGTTTGTATCCACACCGATACAGTCAATGAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ccgaradccgrarccgcccrgaaaccarrgcagcagaagararrrrgcargarargagag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    rcricrccarrargaerrcagaercreaaeceareegaegaerarreeceaaereerrarre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GAACTTGGCAGACTGCGGATAAGAATAAAAAGGAATTTGGTAAGCTTCCTGAAGATGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATACACTATCAACCCCGGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     rrscacarderarrescadaderararrescricerradaderescriadarescentares
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGTGATCAAAGGCGGTATGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TGGTCTTCTCTGAAATGGGCGATTCTAACGCGTCTGTGCCCACTCCCCAACCGGTTTATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     562807 Tradciargécaaaardegecearceaargécercaatrecaacacecaacergrafrer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACACCAGCATCACTTTTGTTT
                                                                                                                                                                                                                                                                                   TITITGGGCAAAGGCAATAGCTCTAGCAAAAAAAAATTGTAGAACAAGTAGAAGCGGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                rarraccrecricaaccaacceacrecrecrecraaaacacarraaaacarraareacarr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTCAAAGCCGTATCCGCCCCGGCTCTATCGCGGCTGAAGATGTGCTCCATGATATGGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TGATCGCGATGACAAGCTCGGATTCGCAAGCAATGGGGCGTGCAGGCGAAGTGATTCCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      562747 ACCGTCCAATGTACGGTGCACAAGGCTTAGCAACCGCACAAACAGCAGTATTCTTTGTTT
                                                                                                                                                                                                     GCGCATGGTATATGGAACGTATGTTTCAAGCGCAGAGAGCCTTGCCGGTAAACGTCGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TAGACATGCTCATGACATGCCACCACCTAGACAAACGCATCCGCGAGGATTTACAATTTT
                                                                                                                           GCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTATTCTATGAATGTGGGCTT
                                                                                                                                                                                                                                                                                                                                                             rrirrigirada de controla de consercencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias de consecuencias
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTCTACCCTCCACCACCCCCACTATTCCCTATACCATTAATACGGTTGCAGAACACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2377
                                                                                                                                                                                                                                                                                                                                                                                                                                           1537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1717
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1897
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2017
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2077
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1777
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1957
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         562927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2257
                                         563701
                                                                                                                       1417
                                                                                                                                                                                                     563641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      563461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1657
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              563401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           563341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       563281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           563161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        563101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            562982
                                                                                                                                                                                                                                                                                   1477
                                                                                                                                                                                                                                                                                                                                                                 563581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          563521
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1597
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ሯ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          d
                                                                                                                                                                                                                                                                                                                                                     유
                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                           ò
```

8 8

8 6 8 6 8 6 8

四次 四次

1280 CONTROLLED CONTRO
4 8 4 8 4 8 4 8 4 8 4 8 4 8 4 8 4 8 8 4 8
190 ACACAGGGGTANTAGGTGAAACTCACACCAAAGCAAGAAATTATTATTATTA 395 4028 ANTIGOGGGTTTAATTTCATTTATACAACCAGGGGGGGGGGGGG

\$ B \$ B \$ B \$ B \$ B \$

6 6 6 6 6 6 6

중 음

```
3852
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGAAAAGACTATGCGGTTTATGGTGAAGAAGCTACTTTTGGTGGTGGTAAATCTATTAG 3132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3131 AGACGGTATGGCGCAAAATCCTCGTGTAACACGTGATGACGTGAACGTTGCAGACCTTGT 3072
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CATTTCTAATGCCGTTATTGATTACGATTACGATAAAGTGGTTAAAGCTGATATAGCCATTAA 3012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1160 AAACGGCAAAATCCATGGCATTGGCAAGGCAGGAAACAAGGACATGCAAGATGGCGTAAG 1219
                                                                                                                            .028 AATTGGGGGTTTTAATTTGCATTTTACACAACGAGAGCAAGACAAATTAATGAATTGTAGT 3969
                                                                                                                                                                                                                                                                                                                                                                     3791 ACACATGATTACAGATATCGAAATCGAGGCTACGTTCCCCGATGGTACTAAGTTAATCAC 3732
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3731 AGTACATCACCCTATTGTTTAAAGGAGGCAGTCAAATGATACCAGGAGAAATTATTACAA 3672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTCGATTTGAACCTGGGGATAAAAAGAAGTTCAATTAGTTGAATATGCTGGCAAACGTA 3432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAAİTTİİGGITİTCGTĞIRAİGĞİCAATGGİCCTAİCĞATĞAGTCACĞIGTCTATCGCC 3372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3371 CAACTGATGAAATGATGAATATGCAGGTGTATTCGGAGATAACGGTGCTGAAACGTGA 3312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3251 ATACGGTCCAACTGTTGGAGATTCCATTCGTTTAGGTGATACGAATCTATTTGCTCAAAT 3192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                549 GCGATAAAGACATCGAGCTCAATGCAGGCAAAGAAGTAACCGAACTTGAGGTTACTAATG 608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAGGGCCTAAATCCTTGCATGTGGGTAGCCATTTCCACTTCTTTGAAGCTAACAAGGCAC 668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TAAAATTCGATCGTGAAAAAGCCTATGGCAAACGCCTAGATATTCCCTCTGGCAACACGC 728
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAGTGATTGGCATGAACGGGCTTGTGAA---TAACATCGCGGATGAACGCCATAAACATA 845
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3671 AAAGTACAGAGGTTGAAATTAATAACCATCATCCTGAAACAGTTATCGAAGTTGAAATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TACGCATTGGGGCAGGACAAACCCGCAAAGTGCAGTTGATTCCTCTTGGTGGCAGTAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGAACATGACTATACCACCTATGGCGAAGAACTTAAATTTTGGCGGGGTAAAACTATCCG
                                                                                     190 ACACAAGGAGTAATAGGTGAAACTCACACCCAAAGAGCAAGAAAAGTTCTTGTTATATA
                                                                                                                                                                                                                1968 GGCGGCGGAAGTTGCACGTCGTCGTAAAGCACGTGGTTTGAAACTAAATCATCCTGAGGC
                                                                                                                                                                                                                                                                                                 3908 ATTAGCTTTAATCAGCGATGAATTATTAGAAGGTGCACGCGATGG---TAAGACCGTTGC
                                                                                                                                                                                                                                                                                                                                          CCAGCTTATGGAAGAGTGCATGCACTTTTTGAAAAAAGATGAAGTAATGCCCGGGGTGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TGTGAATTGGCCCATCGAACCAGATGAGCACTTCAAAGCGGGC-GAAGTGAAATTTGGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTACGGACCCACCAAAGGCGATAAAGTGCGCTTAGGAGATACCGATCTTTGGGCAGAAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TGAGGGTATGGGTCAGAGCAATAGCCC-----TGATGAAAACACCCTAGATTTAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CATCACTAACGCGATGATTATCGACTACACCGGGATTTACAAAGCCGACATTGGGATTAA
    130 TTAAAAAGTTAATAAAAAGTAACGAAATTAGGACTATAATCCCATTGCCTTTAAAATTTA
                                         088 TTACTTGTTTATCACAACAATTAGGATTAATATATAATTTTGTAATTGTATTGTATTGA
                                                                                                                                                                      TAATATGGTTCCCGATCTAGGTGTAGAAGCCACCTTTCCTGATGGTACGAAACTTGTAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              846 AAGCGCTTGACAAGCCGAAATCTCACGGATTTATC--------
                                                                                                                                                                      250
                                                                                                                                                                                                                                                         310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       729
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          789
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3071
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 881
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                       g
                                                                                   ò
                                                                                                                    셤
                                                                                                                                                                      ò
                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 15
US-08-781-986A-22/C
Sequence 2.5 Application US/08781986A
Fatent No. 673748
GENERAL INFORMATION:
FAPLICANT: Charles Kunsch
TITLE OF INVENTION: Staphylococcus aureus Polynucleotides and Sequences
NUMBER OF SEQUENCES: 5255
CORRESPONDENCE ADDRESS:
FARET: 9410 Key West Avenue
CITY: Rockville
STATE: Maryland
COUNTRY: USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
TITLE OF USA
                                                                                                                                                       ġ
ATCTGAACCGATGAAGTACCGTAAAATGTATGGTCAATACGGCGGAAACCTTACAAGTAC 1818
                                                                   GTCAATGACATTCGTGTCTAAAACTGCTTATGAAAATGGTATCAATCGTGCATTAAATTT 1758
                                                                                                                                                                                                                                                                                                                                        AGAAAAAATTACAAGTAATGCAGCAACTGAGTTACCATTAACTCAAAGATACTTCTTATT 1578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    recircaararcegararecraaaarararrrrrraarracacarreaacrrrerara 4089
                                                                                                                                                                                                                                              TAACAGTGCAACACCTAAATTAGACGTTGATCCACAAACATATGAAGTATATGTAGATGG
                                                                                                                            CAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTCTAGCCCAGCGCTACACTTTCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CAACGACAAAACGGCAAAAATCACCGTCGATCCGAAAACCTTCGAGGTCTTTGTAGATGG
                                         CAGCATCACTITIGITICCAAAGTCGCCTATGAAAATGGCGTGAAAGAAAAGCTGGGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      59;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          23.0%; Score 662.8; DB 3; Length 5966; 55.5%; Pred. No. 2.1e-160;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ZIP: 20850

COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette, 3.50 inch, 1.4Mb storage COMPUTER: HP Vectra 486/33
OPERATING SYSTEM: MSDOS version 6.2
SOFTWARE: ASCII Text
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/781,986A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1; Mismatches 1093;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               30,446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELECOMMUNICATION INFORMATION:
TELEPHONE: (301) 309-8504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELEFAX: (301) 309-8512
INFORMATION FOR SEQ ID NO: 22:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5966 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REGISTRATION NUMBER: 30 REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity 55.5
Matches 1437; Conservative
                                                                                                                                                                                                                                                                                                                                                                                  CTAGGCACAA 2609
                                                                                                                                                                                                                                                                                                                                                                                                                         CTAGGAGGAA 1568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: nucleic acid sTRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Benson, Bob
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILING DATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-08-781-986A-22
                                                                                   1817
                                                                                                                            2420
                                                                                                                                                                      1757
                                                                                                                                                                                                                2480
                                                                                                                                                                                                                                                     1697
                                                                                                                                                                                                                                                                                              2540
                                                                                                                                                                                                                                                                                                                                        1637
                                                                                                                                                                                                                                                                                                                                                                                  2600
                                                                                                                                                                                                                                                                                                                                                                                                                         1577
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                              g
                                                                                                                                                             g
                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ద
                                                                                                               ò
                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                               ò
                                     ò
```

6 6 6

8 6 8 6 8 6 8

	20 CCCTCATATGGTCGTGGGCGCACAGAAGCACTAGCAGGGGAAGGTATGATTAC 1279 54CGACATTATATAGGTTCAACAAATGCTCATGCGTGAAATCGTCAC 2898	80 CGCTGGGGGAATCGATTCACACCCCCCTTTCTCCACAACAATTCCCTACCGCTCT 1339	10 AGCCAATGGCGTTACAACCATGTTTGGAGGGGGCACAGGTCCTGTAGATGGCACGAATGC 1399	00 GACTACTATCACTCCGGGCAAATGGAACTTGCACCGCATGTTGCGCGCAGCAGAAGAGTA 1459 	60 TTCTATGAATGTGGGCTTTTTGGGCAAAGGCAATAGCTCTAGCAAAAACAACTTGTAGA 1519 	20 ACAAGTAGAAGCGGGGGTTTTTAAATTGCATGAAGACTGGGGCACAACACCAAG 1579 	80 TGCGATCGATCACTTGATGCTGGCAGATGAATACGATGTGCAAGTTTGTATCCACAC 1639	10 CGATACAGTCAATGAGGCAGGTTATGTAGATGACACCCTAAATGCAATGAACGGCGCGC 1699 	00 CATCCATGCCTACCACATTGAGGGGGGGGGGGGGGGCTCACCTCACCTGATGTTATCACCAT 1759	60 GGCAGGCGAGCTCAATATTCTACCCTCCTCCACCCCCCACTATTCCCTATACCATTAA 1819 	20 TACGGTTGCAGAACACTTAGACATGCTCATGACACCCACC	80 CGAGGATTTACAATTTTCTCAAAGCCGTATCCGCCCCCGGCTCATCGCGGCTGAAGATGT 1939 	10 GCTCCATGATATGGGTGATGGCGATGACAAGCTTCGCAAGCAA	00 AGGCGAAGTGATTCCTCGAACTTGGCAGACTGCGGATAAGAATAAAAAAGAATTTGGTAA 2059 	50 GCTTCCTGAAGATGGCAAAGATAACGATAATTTCCGCATTAAGCGCTACATCTCCAAATA 2119 	20 CACTATCAACCCGGTTTTGACCCACGGGGGGGTATATCGGCTCTGTGGAAGAGG 2179	80 CAAGATCGCCGACTTGGTGGTGTGGAATCCTGCCTTTTTTGGCGTAAAACCCAAAATCGF 2239	40 GAICAAAGGGGGIAIGGIGICIICTGAAAIGGGGGAIICIAACGCGICIGIGCCCAC 2299
3011 27	1220 CC 2954	1280 CC 2897 TC	1340 AC 2837 AC	1400 GF 2777 AM	1460 TT 2717 AC	1520 AC 2657 AC	1580 TC 2597 TC	1640 CC 2537 AC	1700 CF 2477 AC	1760 GC 2417 CC	1820 TA 2357 TA	1880 CC 2297 TC	1940 GC 2237 TC	2000 AC 2177 AC	2060 GC 2117 TT	2120 CA 2057 TA	2180 CF 1997 CF	2240 G

8 & 8 &

8 8 8

8 8 8 8

g

8

셤

8 8

8 8

8 &

음 성

8 &

ò

Search completed: November 29, 2005, 07:30:10 Job time : 550 secs

```
2480 CAACGACAAAAACGGCAAAAATCACCGTCGAAAACCTTCGAGGTCTTTGTAGATGG 2539
1697 TAACAGTGCAACACCTAAATTAGACGTTGATCCACAAAACATATGAAGTATATGTAGATGG 1638
1937 IGTAAAGGGCGGATTAATTAACTCTGCCGTAAATGGCGATGCAAATGGTTCTATACCTAC 1878
                           2300 TCCCCAACCGGTTTATTACCGCGAAATGTTTGGGCATCACGGCAAGGCGAAATTTGACAC 2359
                                             1757 AAAACGCATGGTGCGTCCAGTTAAAATATTAGACAATTATCTAAAGCAGATATGAAAA 1698
                                                                                                                                                                                                                                          2540 CAAACTCTGCACCTCTAAACCCACCTCGCAAGTGCCTTAGGCCCAGGGCTACACTTTCTT 2599
                                                                                                                                                                                                                                                           1637 AGAAAAAATTACAAGTAATGCAGCAACTGAGTTACCATTAACTCAAAGATACTTCTTATT 1578
                                                                                                                                                                                                                                                                                                 2600 CTAGGCACAA 2609
                                                                                                                                                                                                                                                                                                                           1577 CTAGGAGGAA 1568
                                              원 상
                                                                                                   g
                                                                                                                                                       원 장
                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                a
                           ò
                                                                                                                                    δ
                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                            ò
```

```
GenCore version 5.1.6
Copyright (c) 1993 - 2005 Compugen Ltd.
```

OM protein - protein search, using sw model

November 28, 2005, 08:00:02; Search time 14:5164 Seconds (without alignments) 1497.963 Million cell updates/sec Run on:

US-09-904-994B-2 1181 1 VKLTPKEQEKFLLYYAGEVA......ADERHKHKALDKAKSHGFIK 226 Title: Perfect score: Sequence:

BLOSUM62 Gapop 10.0 , Gapext 0.5

Scoring table:

283416 Total number of hits satisfying chosen parameters:

283416 segs, 96216763 residues

Searched:

Minimum DB seq length: 0 Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

pir1:* pir2:* pir3:* PIR_80:* Database

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

STIMMARTES

	Description	urease alpha chain	e (EĈ 3.	•	urease, beta/gamma	urease (EC 3.5.1.5	probable urease F1	urease (EC 3.5.1.5	3.5.1.	urease (EC 3.5.1.5	probable ureA prot	probable urease st	8	urease (EC 3.5.1.5	urease (gamma subu	۲.	.1.	urease (EC 3.5.1.5	.1.	пa		ď	urease (EC 3.5.1.5		urease gamma chain	urease gamma subun		urease gamma subun	urease gamma subun	urease gamma chain
SUMMARIES	ID	B71977	URKCAP	S35290	D75586	URJB	A96699	T37939	T29055	A36138	H70664	D85603	B90794	S74889	B69729	A36950	S47102	A64076	S38484	C90027	B47090	C69729	S08478	B43719	AD2264	E83037	S42602	D83681	AE2872	F97648
	DB	10	Н	Н	N	H	N	~	N	-	71	N	~	~	~	~	N	~	Н	N	~	~	Н	H	~	~	~	7	N	0
	Length	238	238	237	228	840	838	835	227	100	100	100	100	100	105	100	100	100	137	100	100	124	100	100	100	100	100	100	100	107
	Query Match		51.7	48.0	40.9		35.5	33.7		23.8			23.5	23.4	22.9	22.9	22.8	22.7		22.5			22.2				21.8		21.3	21.3
	Score		610.5		æ	•	٠	398.5	σ				•		7	270.5	•		9	ů.	٠	9	ď	;	σ.	æ	7	٠		ä
	Result No.	:	7	٣	4	S	9	7	89	σ	10	11	12	13	14	15	16	17	18	19	20							27		

RESULT 2
URKCAP
urease (EC 3.5.1.5) 26K chain - Helicobacter pylori (strains 26695 and others)
NyAlternate names: urea amidohydrolase; urease alpha chain
C;Species: Helicobacter pylori
C;Species: Helicobacter pylori
C;Date: 30-Sep-1991 #sequence revision 15-Aug-1997 #text change 09-Jul-2004
C;Accession: A38537; A64529; S07884; B35306; A41502; A61371; E49215

urease beta chain	urease (EC 3.5.1.5	urease beta subuni	urease (EC 3.5.1.5	urease (EC 3.5.1.5	urease (EC 3.5.1.5	urease beta subuni	urease (EC 3.5.1.5	hypothetical prote	urease (EC 3.5.1.5	urease (EC 3.5.1.5	urease complex com	urease (EC 3.5.1.5	urease (EC 3.5.1.5	urease (EC 3.5.1.5	urease (EC 3.5.1.5
AE2264	S38483	D90027	AI0324	S31418	S47103	AC2872	S42604	S76224	AC3333	S31417	A82891	AB3333	T50708	I64075	AG3458
~	7	~	~	٦	N	~	н	7	~	7	~	~	~	н	~
108	100	136	100	164	126	101	101	105	100	102	101	159	100	101	101
		_	2	4	m	۲.	0.	8.	7.6	7.6	9.5	9.5	6.9	19.1	16.1
20.9	20.9	20.	20.	20.	20.	20	20	H	H	H	-	-	_	•	•
•	246.5 20.9	•	•	•	••	•••	•							225.5	225.5

ALIGNMENTS

RESULT 1 B71977 urease alpha chain - Helicobacter pylori (strain J99) C;Species: Helicobacter pylori A;Variety: strain J99 C;Date: 12-Feb-1999 #sequence_revision 12-Feb-1999 #text_change 09-Jul-2004 C;Accession: B71977 R;Alm, R.A., Ling, L.S.L.; Moir, D.T.; King, B.L.; Brown, B.D.; Doig, P.C.; Smith, D.R.; Ives. C.: Gibson, R.: Merberg, D.: Mills, S.D.; Jiang, O.: Tavlor, D.B.; Vovis, G.F.;	Nature 397, 176-180, 1999 A, Title: Genomic sequence comparison of two unrelated isolates of the human gastric path A, Reference number: A71800; MUID: 99120557; PMID: 9923682 A, Accession: B71977 A, Status: preliminary A, Molecule type: DNA A, Residues: 1.238 < ARN> A, Cross-references: UNIPROT: Q92MZ4; UNIPARC: UP10000137D6F; GB: AE001446; GB: AE001439; NII A, Experimental source: strain J99 C; Genetics:	A;Gene: ureaA C;Superfamily: urease, fused gamma/beta subunit; urease 11K chain homology; urease 12K c C;Superfamily: urease 11K chain homology <u1> F;1-101/Domain: urease 12K chain homology <u1> F;108-204/Domain: urease 12K chain homology <u1> Cuery Match Query Match 51.9%; Score 613.5; DB 2; Length 238; Best Local Similarity 53.1%; Pred. No. 1.3e-43; Matches 119; Conservative 42; Mismatches 62; Indels 1; Gaps 1;</u1></u1></u1>	OY 1 VKLTPKEQEKFLLYYAGEVARKRAEGLKLNOPEAIAYISAHIMDEARRGKKTVAQLMEE 60 	Qy 61 CMHFLKKDEVMPGVGNMVPDLGVBATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120 	Qy 121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180 	OY 181 QTRKYOLIPLGGSKKVIGMNGLYNNIADERHKHKALDKAKSHGF 224 ::

ä

9

9

180

```
A;Cross-references: UNIPROT:Q08715; UNIPARC:UPI0000137D6C; EMBL:X69080; NID:g396160; PID:
C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A, Description: catalyzes the hydrolysis of one molecule of urea to carbon dioxide and tw. C; Superfamily: urease, fused gamma/beta subunit; urease 11K chain homology; urease 12K c; Keywords: heterodimer; hydrolase; metalloprotein
F;1-101/Domain: urease 11K chain homology <U11.>
F;108-204/Domain: urease 12K chain homology <U12.>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Title: Cloning, expression and sequencing of Helicobacter felis urease genes. A;Reference number: $35290; MUID:94018627; PMID:8412683
A;Accession: $35290
                                                                                                                                                                                                                                                                                                                                                             61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                     61 GRTLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               urease (EC 3.5.1.5) 26K chain - Helicobacter felis
NyAlternate names: urease alpha chain
C.Species: Helicobacter felis
C.Species: 31-Dec-1993 #sequence_revision 02-Dec-1994 #text_change 09-Jul-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG
                                                                                                                                                                                                                                                                     VKLTPKEQEKF1LYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                               1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ä
                                                                                                                                                               1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 237;
                                                                                                  Length 238;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    : : |:|| :||:||:|| || ||:|| || EEKSVELIDIGGNKRIYGFNSLVDRQADADGKKIGLKRAKEKGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; Score 566.5; DB 1;
; Pred. No. 1.1e-39;
43; Mismatches 68;
                                                                                                                                                           62;
                                                                                                  DB 1;
                                                                                              51.7%; Score 610.5; DB 1
52.7%; Pred. No. 2.4e-43;
tive 43; Mismatches 62
F;1-101/Domain: urease 11K chain homology <U11>F;108-204/Domain: urease 12K chain homology <U12>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          50.08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C,Accession: S35290
R,Ferrero, R.L.; Labigne, A.
Mol. Microbiol. 9, 323-333, 1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity 50.0%
Matches 112; Conservative
                                                                                                                                Best Local Similarity 52.73
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Residues: 1-237 <FER>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         C;Complex: heterodimer C;Function:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Gene: ureA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               835290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                           J. Bacteriol. 173, 1920-1931, 1991
A, Title: Shuttle cloning and nucleotide sequences of Helicobacter pylori genes responsib A, Reference number: A38537, MUID: 91161505; PMID: 2001995
                                                                                                                                                                                                                                                R;Tomb, J.F.; White, O.; Kerlavage, A.R.; Clayton, R.A.; Sutton, G.G.; Fleischmann, R.D. Peterson, S.; Loftus, B.; Richardson, D.; Dodson, R.; Khalak, H.G.; Glodek, A.; McKenne Son, J.D.; Kelley, J.M.; Cotton, M.D.; Weidman, J.M.; Fujii, C.; Bowman, C.; Watthey, L. Nature 388, 539-547, 1997
A;Authors: Wallin, E.; Hayes, W.S.; Borodovsky, M.; Karpk, P.D.; Smith, H.O.; Fraser, C. A;Areference number: A64520; MulD:97394467; PMID:9252185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A, Molecule type: DNA
A, Molecule type: DNA
A, Residues: 1-36,7R,38-48,7R,50-131,'PP',134-238 < CLA>
A, Residues: 1-36,7R,38-48,7R,50-131,'PP',134-238 < CLA>
A, Cross-references: UNIPARC:UP1000002DB17; EMBL:X17079; NID:g43633; PIDN:CAA34932.1; PID
R; Dunn, B.E.; Campbell, G.P.; Perez-Perez, G.I.; Blaser, M.J.
A, Balol. Chem. 265, 9464-9469, 1990
A, Title: Purification and characterization of urease from Helicobacter pylori.
A, Reference number: A35306; MUID:90264448; PMID:2188975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Boans Jr., D.J.; Evans, D.G.; Kirkpatrick, S.S.; Graham, D.Y.
Gorcob, Pathog. 10, 15-26, 1991
Title: Characterization of the Helicobacter pylori urease and purification of its subu
Reference number: A61371; MUID:91312104; PMID:1857197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       of the urease enzymes of Helicobacter species
PMID:1452359
                                                                                                                                                                                                                            A;Cross-references: UNIPROT:P14916; UNIPARC:UPI000002C3CD; GB:M60398; NID:g149007; PIDN R;Tomb, J.F.; White, O.; Kerlavage, A.R.; Clayton, R.A.; Sutton, G.G.; Fleischmann, R.D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Cross-references: UNIPARC:UP1000002C3CD; GB:AE000529; GB:AE000511; NID:g2313152; PIDN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Description: catalyzes the hydrolysis of one molecule of urea to carbon dioxide and t
C; Superfamily: urease, fused gamma/beta subunit; urease 11K chain homology; urease 12K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Title: Nucleotide sequence of two genes from Helicobacter pylori encoding for urease Reference number: S07884; MUID:90221820; PMID:2326167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Cross-references: UNIPARC:UP10000030924
R;Hu, L.T.; Mobley, H.L.T.
Infect. Immun. 58, 992-998, 1990
A;Title: Purification and N-terminal analysis of urease from Helicobacter pylori. A;Reference number: A41502; MUID:90202165; PMID:2318539
A;Accession: A41502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Experimental source: strain 26695
R;Clayton, C.L.; Pallen, M.J.; Kleanthous, H.; Wren, B.W.; Tabaqchali, S.
Nucleic Acids Res. 18, 362, 1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Cross-references: UNIPARC:UP100000B16E0; PIDN:AAB24359.1; PID:g260968
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A/Gene: ureA, HP0073
C;Complex: heterodimer of 26K chain and 62K chain (see PIR:URKCBP)
C;Function:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Status: nucleic acid sequence not shown; translation not shown A;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C;Superfamily: urease, fused gamma/beta subunit; urease 11K
C;Keywords: heterodimer; hydrolase; metalloprotein
F;1-238/Product: urease 26K chain #status experimental <MAT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A, Experimental source: strain NCTC 11637
A, Note: sequence extracted from NCBI backbone (NCBIP:119486)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Molecule type: protein
A;Residues: 1-5;R',7-20;A',R',22-30 <EVA>
A;Cross-references: UNIPARC;UPI0000172DA5
R;Turbett, G.R.; Hoj, P.B.; Horne, R.; Mee, B.J.
Infect. Immun. 60, 5255-5266, 1992
A;Tile: Purification and characterization of th
A;Reference number: A49215; MUID:93084378; PMID:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Molecule type: protein
Residues: 1-13,'S',15-20 <HUA>
;Cross-references: UNIPARC:UP10000172DA4
   R;Labigne, A.; Cussac, V.; Courcoux, P.
J. Bacteriol. 173, 1920-1931, 1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Experimental source: strain UMAB41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Accession: B35306
A;Molecule type: protein
A;Residues: 1-20 <DUN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Molecule type: protein A; Residues: 1-12 <TUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Residues: 1-238 < TOM>
                                                                                                                                                               A;Molecule type: DNA
A;Residues: 1-238 <LAB>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Status: preliminary
                                                                                                                                    A; Accession: A38537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Accession: A61371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Accession: E49215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Accession: S07884
```

60

urease, beta/gamma subunit - Deinococcus radiodurans (strain R1)

us-09-904-994b-2.rpr

```
Cjaccesion: A96699
R;Theologis, A.; Ecker, J.R.; Palm, C.J.; Federspiel, N.A.; Kaul, S.; White, O.; Alonso, Chin, C.W.; Chung, M.K.; Conn, L.; Conway, A.B.; Conway, A.R.; Creasy, T.H.; Dewar, K.; ansen, N.F.; Hughes, B.; Huizar, L.
Nature 408, 816-820, 2000
A;Authors: Hunner, J.L.; Jenkins, J.; Johnson-Hopson, C.; Khan, S.; Khaykin, E.; Kim, C.C.; Li, J.H.; Li, Y.; Liu, X.; Liu, Z.A.; Luros, J.S.; Maiti, R.; Marziali, Rizzo, M.; Rooney, T.; Rowley, D.; Sakano, H.
A;Authors: Salzberg, S.L.; Schwartz, J.R.; Shinn, P.; Southwick, A.M.; Sun, H.; Tallon, A;Title: Sequence and analysis of chromosome 1 of the plant Arabidopsis.
A;Reference number: A86141; MUID:21016719; PMID:11130712
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 GQHLLGRRQVLPAVPHLLNAVQVEATFPDGTKLVTVHDPIS-RENGELQEALFGSLLPVP 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120 SLDKFAETKEDNRIPGEILCEDECLTINIGRKAVILKVTSKGDRPIQVGSHYHFIEVNPY 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ---------C-DKDIELNAGKEVTELEVINEGPKSLHVGSHFHFFEANKA 154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                155 LKFDREKAYGKRLDIPSGNTLRIGAGQTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHK 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            probable urease F12B7.10 [imported] - Arabidopsis thaliana
C;Species: Arabidopsis thaliana (mouse-ear cress)
C;Date: 02-Mar-2001 #sequence_revision 02-Mar-2001 #text_change 05-Oct-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMBE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    jack bean urease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 1; Length 840;
                                                                                                                                                             Υ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            77; Indels
                                                                A,Molecule type: protein
A,Molecule type: protein
A,Residues: 1-246, N., 248-257, P., 259-268, S., 270-840 <TA2>
A,Cross-references: UNIPARC:UPI0000172D9F
R;Mamiya, G.; Takishima, K.; Masakuni, M.; Kayumi, T.; Ogawi
J. Protein Chem. 6, 55-59, 1987
A,Fitle: Complete amino acid sequence of jack bean urease.
A,Reference number: A60883
                                                                                                                                                                                                                                                                                                                                                                          A.Cross-references: UNIPARC:UP10000172D9E
R.Takishima, K.; Mamiya, G.
Protein Seq. Data Anal. 1, 103-106, 1987
A.Title: Location of the essential cysteine residue of j
A.Reference number: S03364; MUID:88190054; PMID:3447159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               37.2%; Score 439.5; DB 1
39.6%; Pred. No. 1.7e-28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            47; Mismatches
                                                                                                                                                                                                                                                                                                                                                    A;Residues: 1-246,'R',248-840 <TA3>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local Similarity 39.6
Matches 99; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    240 AMHAVRSKGF 249
         A;Reference number: JT0001
                                                                                                                                                                                                                                                                                                                          A, Molecule type: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Molecule type: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             215 ALDKAKSHGF
                                                                                                                                                                                                                                                                                       A; Accession: A60883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Accession: S03364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
C;Species: Deinococcus radiodurans
C;Date: 03-Dec-1999 #sequence_revision 03-Dec-1999 #text_change 06-Jan-2003
C;Date: 03-Dec-1999 #sequence_revision 03-Dec-1999 #text_change 06-Jan-2003
C;Accession: D75586
R;White, O.; Eisen, J.A.; Heidelberg, J.F.; Hickey, E.K.; Peterson, J.D.; Dodson, R.J.;
N.; Shen, M.; Vamathevan, J.G.; Lam, P.; McDonald, L.; Utterback, T.; Zalewski, C.; Ma
S; Smith, H.O.; Venter, J.C.; Fraser, C.M.
Science 286, 1571-1577, 1999
A;Title: Genome sequence of the radioresistant bacterium Deinococcus radiodurans R1.
A;Reference number: A75250; MUID:20036896; PMID:10567266
A;Accession: D75586
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A,Title: Cloning and Sequencing of a jack bean urease-encoding cDNA.
A,Reference number: JS0642; MUID:92084145; PMID:1721034
A,Contents: annotation
A,Note: this sequence has been revised in reference JC1396
R;Takishima, K.; Suga, T.; Mamiya, G.
R;Takishima, K.; Suga, T.; Mamiya, G.
A,Title: The structure of jack bean urease. The complete amino acid sequence, limited px
A,Reference number: S01021; MUID:88296463; PMID:3402446
                                                                                                                                                                                                                                                                                                                                                                                                             A;Cross-references: UNIPARC:UPI0000D3C05; GB:AE001863; GB:AE001825; NID:g6460670; PIDN:
A;Experimental source: strain R1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Map position: 2
C;Superfamily: urease, fused gamma/beta subunit; urease 11K chain homology; urease 12K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ď,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               60 GAAILTPDDVLDGVPELIHEIQVEGTFPDGTKLVTVHDPIRGAASRRVAGEYLLEGG--- 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFK-AGE--VKFGCDK 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  118 DIELNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRI 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              urease (EC 3.5.1.5) - jack bean
NyAlternate names: urea amidohydrolase
C;Species: Canavalia ensiformis (jack bean)
C;Species: Canavalia ensiformis (jack bean)
C;Date: 28-Dec-1987 #sequence revision 30-Sep-1993 #text change 05-Oct-2004
C;Accession: JC1396; S01021; JT0001; A60883; S03364; JS0642
R;Riddles, P.W.; Whan, V.; Blakeley, R.L.; Zerner, B.
Gene 121, 399-400, 1992
A;Reference number: JC1396; MUID:93077062; PMID:1446838
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; Kayumi, T.; Ogawa, K.; Sekita,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Molecule type: mRNA
A;Residues: 1-840 <RID>
A;Cross-references: UNIPROT:P07374; UNIPARC:UPI0000137DA7; GB:M65260
R;Riddles, P.W.; Whan, V.; Blakeley, R.L.; Zerner, B.
Gene 108, 265-267, 1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    œ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAGQTRKVQLIPLGGSKKVIGMNGLVNNIAD-ERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            177 EPGEBREVDLVPLGGSRTVYGMNALVNGDLDAPGTREAALEGARAAGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ;; Score 483; DB 2; Length 228;
;; Pred. No. 8.6e-33;
44; Mismatches 70; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A,Residues: 1-246, R., 248-840 <TA1>
A,Cross-references: UNIPARC:UPIO000172D9E
Rymanya, G.; Takishima, K.; Masakuni, M.; Kayumi, T.; Ogar Proc. Upn. Acad B Phys. Biol. Sci. 61, 395-398, 1985
A,Title: Complete amino acid sequence of jack bean urease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    40.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity 46.5%
Matches 106; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A, Molecule type: protein
                                                                                                                                                                                                                                                                                                                                                    A; Molecule type: DNA
A; Residues: 1-228 <WHI>
                                                                                                                                                                                                                                                                                       A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Accession: JC1396
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gene: DRA0319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 5
```

Š 셤 ઠે 셤 ò g ò g

```
Usease (EC 3.5.1.5) beta/gamma chain - Streptomyces coelicolor
C;Species: Streptomyces coelicolor
C;Species: Streptomyces coelicolor
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change 06-Jan-2003
C;Date: 22-Oct-1995 #sequence_revision 22-Oct-1999 #text_change 06-Jan-2003
C;Accession: T29055
R;Redenbach, M.; Kieser, H.M.; Denapaite, D.; Bichner, A.; Cullum, J.; Kinashi, H.; Hopwn Mol. Microbiol. 21, 77-96, 1996
A;Title: A set of ordered cosmids and a detailed genetic and physical map for the 8 Mb SI A;Reference number: 220556; MUID:97000351; PMID:8843436
A;Reference number: 220556; MUID:97000351; PMID:8843436
A;Reference number: 220556; Muid: 27000351; PMID:8843436
A;Reference number: 220556; Muid: 27000351; PMID:8843436
A;Reference number: 220556; Muid: 27000351; PMID:8843436
A;Reference number: 220556; Muid: 27000351; PMID:8843436
A;Reference number: 220556; Muid: 27000351; PMID:8843436
A;Reference number: 220556; Muid: 27000351; PMID:8843436
A;Reference number: 220556; Muid: 27000351; PMID:8843436
A;Reference number: 220556; Muid: 27000351; PMID:8843436
A;Reference number: 220556; Muid: 27000351; PMID:8843436
A;Reference number: 220556; Muid: 27000351; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556; PMID:8843436
A;Reference number: 220556;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Gene: ureAB
C;Superfamily: urease, fused gamma/beta subunit; urease 11K chain homology; urease 12K cl
C;Keywords: hydrolase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A,Cross-references: UNIPROT:P18316; UNIPARC:UPI00001103C0; GB:M36068; NID:g149335; PIDN:.R;Collins, C.M.; Gutman, D.M.; Laman, H.
R.Collins, C.M.; Gutman, D.M.; Laman, H.
A.M. Microbiol. 8, 187-198, 1993
A,Title: Identification of a nitrogen-regulated promoter controlling expression of Klebs A,Reference number: S32937; WUID:93268094; PMID:8497192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Molecule type: DNA
A;Residues: 1-66,'K',68-100 <COL>
A;Cross-references: UNIPARC:UP10000137D9A; EMBL:L07039; NID:g149330; PIDN:AAA25147.1; PI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              urease (EC 3.5.1.5) 11K chain [validated] - Klebsiella pneumoniae
NyAlternate names: urea amidohydrolase; urease chain A; urease gamma chain
C;Species: Klebsiella pneumoniae
C;Species: Klebsiella pneumoniae
C;Accession: A36138; S32938
E;Mulrooney, S.B.; Haushinger, R.P.
T;Mulrooney, S.B.; Haushinger, R.P.
J. Bacteriol. 172, 5837-5843, 1990
A;Title: Sequence of the Klebsiella aerogenes urease genes and evidence for accessory I A;Reference number: A36138; MUID:91008957; PMID:2211515
A;Accession: A36138
A;Residues: 1-100 <MUL>
181 KLCFDRSKAYGKRLDIPSGTAIRFEPGVMKIVNLIPIGGAKLIQGGNSLSKGVFDDSRTR 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIBPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            60 ARSVLGPDDVLPGVADVVTEVHVEAVFDDGSRLAVVADPV-----GGGGLGDDAPGA 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121 LNAGKEVTE-----LEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNT 174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Cross-references: UNIPARC: UP100000DACF4; EMBL; AL031124; PIDN: CAA19973.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               175 LRIGAGQTRKVQLIPLGGSKKVIGMNGLVNNIAD-ERHKHKALDKAKSHGFI 225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match 33.4%; Score 395; DB 2; Length 227; Best Local Similarity 39.7%; Pred. No. 1.7e-25; Matches 92; Conservative 45; Mismatches 79; Indels
                                                                                                                                                    214 KALDKAKSHGFI 225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       R;Jabri, E.; Karplus, P.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        qq
                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ଚ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                          셤
                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A.Molecule type: DNA
A.Rolecule type: DNA
A.Residues: 1-835 <MCD>
A.Ross-references: UNIPROT:000084; UNIPARC:UPI0000137DA9; EMBL:AL109820; PIDN:CAB52575,
A.Experimental source: strain 972h-; cosmid c1952
                                                                                                                                                                                                                                                                                    62K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Superfamily: urease; urease 11K chain homology; urease 12K chain homology; urease 62K Keywords: hydrolase
                                   A;Status: preliminary
A;Status: Dreliminary
A;Molecule type: DNA
A;Molecule type: DNA
A;Molecule type: DNA
A;Cross-references: UNIPARC:UPI00000ABA6F; GB:AE005173; NID:g6382524; PIDN:AAF07806.1;
C;Genetics:
A;Gene: F12B7.10
A;Map position: 1
C;Superfamily: urease; urease 11K chain homology; urease 12K chain homology; urease 62%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61 DMLGKRHVQPNVVHLLHEIMIEATFPDGTYLITIHDPICTTDGNLEHALYGSFLPTPSQE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121 LFPLEEEKLYAPENSPGFVEVLEGEIELLPNLPRTPIEVRNMGDRPIQVGSHYHFIETNE 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GRQLLGRRQVLPAVLHLLYTVQVEGTFRDGTKLVTVHEPISLENGNLELALHGSFLPVPS 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121 LDKFPEVHEGVIIPGDMKYG-DGSIIINHGRKAVVLKVVNTGDRPVQVGSHYHFIEVNPL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               63 HFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPI--------BPDE 104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -- DKDIELNAGKEVTELEVTNEGPKSLHVGSHFHFFEANK 153
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    154 ALKFDREKAYGKRLDIPSGNTLRIGAGQTRKVQLIPLGGSKKVIGMNGLVNNIADERHKH 213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ----PDEH---FKAGEVKFGCDKDIELNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKA 154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LKFDREKAYGKRLDIPSGNTLRIGAGQTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHK 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              urease (EC 3.5.1.5) - fission yeast (Schizosaccharomyces pombe)
C;Species: Schizosaccharomyces pombe
C;Species: Schizosaccharomyces pombe
C;Accession: T37939
R;McDougall, R.C.; Rajandream, M.A.; Barrell, B.G.; Bothe, G.; Pohl, T.
submitted to the EMBL Data Library, August 1999
A;Reference number: Z21755
A;Reference number: Z21755
A;Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3 LTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEECM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       29;
                                                                                                                                                                                                                                                                                                                                                                                                                    27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 33.7%; Score 398.5; DB 2; Length 835; Best Local Similarity 36.1%; Pred. No. 4.2e-25; Matches 91; Conservative 38; Mismatches 94; Indels 29
                                                                                                                                                                                                                                                                                                                                                                                                                    80; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CMHFLKKDEVMPGVGNMVPDLGVEATPPDGTKLVTVNWPIE----
                                                                                                                                                                                                                                                                                                                                                    DB 2;
                                                                                                                                                                                                                                                                                                                                                    Score 419.5; DB :
Pred. No. 7.7e-27
                                                                                                                                                                                                                                                                                                                                                ch 35.5%; Score 419.5; D
1 Similarity 37.2%; Pred. No. 7.7e-
93; Conservative 50; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         :: : ||
LMETMERRGF 249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           215 ALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                105 HFKAGEVKFGC---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gene: SPDB:SPAC1952.11c
                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity
       A; Accession: A96699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Map position: C;Superfamily: u;C;Keywords: hydro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              19
                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8,
```

ď

Ω,

```
R;Perna, N.T.; Plunkett III, G.; Burland, V.; Mau, B.; Glasner, J.D.; Rose, D.J.; Mayhew iller, L.; Grotbeck, E.J.; Davis, N.W.; Lim, A.; Dimalanta, E.; Potamousis, K.; Apodaca, Nature 409, 529-533, 2001
A;Title: Genome sequence of enterohemorrhagic Escherichia coli O157:H7.
A;Reference number: A85480; MUID:21074935; PMID:11206551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    urease gamma subunit [imported] - Escherichia coli (strain 0157:H7, substrain RIMD 05099 C.Species: Escherichia coli
C.Spate: 18-Jul-2001 #sequence_revision 18-Jul-2001 #text_change 09-Jul-2004 C.Accession: B90794
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       R;Hayashi, T.; Makino, K.; Ohnishi, M.; Kurokawa, K.; Ishii, K.; Yokoyama, K.; Han, C.G. gaswara, N.; Yasunaga, T.; Kuhara, S.; Shiba, T.; Hattori, M.; Shinagawa, H. Dank Res. B, 11-22, 2001
A;Title: Complete genome sequence of enterohemorrhagic Escherichia coli O157:H7 and geno A;Reference number: A99629; MUID:21156231; PMID:11258796
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A,Cross-references: UNIPROT:QBXAG2; UNIPARC:UPI00000D5DF7; GB:BA000007; PIDN:BAB34745.1;
A,Experimental source: strain O157:H7, substrain RIMD 0509952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Residues: 1-100 <ST2>
A;Cross-references: UNIPARC:UP100000D5DF7; GB:AE005174; NID:g12514462; PIDN:AAG55697.1;
A;Experimental source: strain O157:H7, substrain EDL933
                                                                                                                                                                                                                                                                                                                A,Regidues: 1-100 <STO>
A,Regidues: 1-100 <STO>
A,Cross-references: UNIPROT:Q8XAC2; UNIPARC:UPI00000D5DF7; GB:AE005174; NID:g12513945;
A,Experimental source: strain O157:H7, substrain EDL933
A,Accession: E88554
A,Status: preliminary
A,Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 VKLIPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMBE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   urease (EC 3.5.1.5) 11K chain - Synechocystis sp. (strain PCC 6803) N;Alternate names: protein slr1256; urease gamma chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 2; Length 100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 2; Length 100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         C;Superfamily: urease, gamma subunit; urease 11K chain homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C;Superfamily: urease, gamma subunit; urease 11K chain homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPI 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPI 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GRHVLSREQVMEGIPEMIPDIQVEATFPDGSKLVTVHNPI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GRHVLSREQVMEGIPEMIPDIQVEATFPDGSKLVTVHNPI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               23.5%; Score 277.5; DB 2; 57.0%; Pred. No. 3.6e-16; rative 20; Mismatches 22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       23.5%; Score 277.5; DB 2; 57.0%; Pred. No. 3.6e-16; tive 20; Mismatches 22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local Similarity 57.0%
nes 57, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local Similarity 57.04
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C; Species: Synechocystis sp.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Residues: 1-100 <HAY>
                                                                                                                                                                                                                                           A;Status: preliminary
A;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Gene: ureA; ureA_2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Accession: B90794
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Gene: ECs1322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            C; Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
   submitted to the Brookhaven Protein Data Bank, June 1995
A;Reference number: A6597; PDB:IRRA
A;Contents: annotation; X-ray crystallography, 2.3 angstroms, residues 1-100
Science 268, 998-1004, 1995
A;Title: The crystal structure of urease from Klabsiella aerogenes.
A;Ritle: The crystal structure of urease from Klabsiella aerogenes.
A;Reference number: A56340; MUID:95273988; PMID:7754395
A;Reference number: A56340; MUID:95273988; PMID:7754395
A;Contents: annotation; X-ray crystallography, 2.3 angstroms
C;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Residues: 1-100 <COL>
A;Cross-references: UNIPROT:P50043; UNIPARC:UPI0000137D9C; GB:Z83859; GB:AL123456; NID:g
A;Experimental source: strain H37Rv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 probable ureA protein - Mycobacterium tuberculosis (strain H37RV)
C;Species: Mycobacterium tuberculosis
C;Species: Mycobacterium tuberculosis
C;Date: 17-311-1998 #sequence_revision 17-311-1998 #text_change 09-Jul-2004
C;Accession: H70664
R;Cole, S.T.; Broach, R.; Parkhill, J.; Garnier, T.; Churcher, C.; Harris, D.; Gordon, S.; Connor, R.; Davies, R.; Devlin, K.; Feltwell, T.; Gentles, S.; Hamlin, N.; Holroyd, S.; Mainandersem, M.A.; Rogers, J.; Rutter, S.; Seeger, K.; Skelton, S.; Squares, S.
Nature 393, 537-544, 1998
A;Authors: Sqares, R.; Sulston, J.E.; Taylor, K.; Whitehead, S.; Barrell, B.G.
A;Title: Deciphering the biology of Mycobacterium tuberculosis from the complete genome A;Reference number: A70500; MUID:98295987; PMID:9634230
A;Accession: H70664
A;Status: preliminary; nucleic acid sequence not shown; translation not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            probable urease structural subunit A (gamma) [imported] - Escherichia coli (strain O157:
C;Species: Escherichia coli
C;Date: 16-Feb-2001 #sequence_revision 16-Feb-2001 #text_change 09-Jul-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 VKLTPKEOEKFLLYYAGEVARKRKAEGLKLNOPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          C;Genetics:
A;Gene: ureA
C;Superfamily: urease, gamma subunit; urease 11K chain homology
F;1-100/Domain: urease 11K chain homology <U11>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          22; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             23; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPI 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPI 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GRHVLTREQVMEGVPEMIPDIQVEATFPDGSKLVTVHNPI 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GREVLGRDDVMEGVPEMLABVQVEATFPDGTKLVTVHQPI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 281.5; DB 1;
Pred. No. 1.7e-16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 278.5; DB Pred, No. 3e-16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          18; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             18; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                23.8%;
59.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        23.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity 58.0%
Matches 58; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity 59.04
Matches 59; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C; Accession: D85603; E85654
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 11
```

ठ 셤 ò 엄

8 a ð 셤 1 MKLTPVEQEKLLIFAAGELAKQRKARGVLLNYPEAAAYITCFIMEGARDG-KGVAELMEA 59

셤

```
Cispeciaes: Bacillus sp.
Cispeciaes: Bacillus sp.
Cispeciaes: Bacillus sp.
Cispeciaes: Bacillus sp.
Cispeciaes: Bacillus sp.
Cispeciaes: Bacillus sp.
Cispeciaes: A36950 #sequence_revision 07-Jul-1995 #text_change 09-Jul-2004
Cispeciaes: M.; Hidaka, M.; Nakamura, A.; Masaki, H.; Uozumi, T.
J. Bacteriol. 176, 432-442, 1994
A; Thie: Cloning, sequencing, and expression of thermophilic Bacillus sp. strain TB-90 us A; Reference number: A36950, MUID:94117379; PMID:8288539
A; Reference number: A36950
A; Reference number: A36950, MUID:94117379; PMID:8288539
A; Residues: 1-100 cMAE>
A; Residues: 1-100 cMAE>
A; Cross-references: UNIPROT:007399; UNIPARC:UPI0000137D95; GB:D14439; NID:g393296; PIDN:)
C; Superiamily: urease, gamma subunit; urease 11K chain homology
C; Reywords: hydrolase
F;1-100/Domain: urease 11K chain homology <UII>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 MXLTSREMEKLMIVVAADLARRKERGLKLNYPEAVAMITYEVLEGARDG-KTVAQLMOY 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                            60 GRHVLTEKDVMEGVPEMLDSIQVEATFPDGVKLVTVHQPI-----SAEVK 104
                                                                                  61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVK 112
                                                                                                                                                                                                                                                                                                                                                               urease (EC 3.5.1.5) 11k chain - Bacillus sp. (strain TB-90)
N/Alternate names: ureA protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPI 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 22.9%; Score 270.5; DB 2; Best Local Similarity 55.0%; Pred. No. 1.4e-15; Matches 55; Conservative 19; Mismatches 25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Search completed: November 28, 2005, 08:20:40 Job time : 15.5164 secs
                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Urease (9damina subutili) uten - Dealiles Subutilius subtilis C. Date: 05-Dec-1997 #text_change 09-Jul-2004
C. Species: Bacillus subtilis C. Dec-1997 #text_change 09-Jul-2004
C. Accession: B69729
R. Kunst, F.; Ogaaawara, N.; Moszer, I.; Albertini, A.M.; Alloni, G.; Azevedo, V.; Derter C.; Bron, S.; Brouillet, S.; Bruschi, C.V.; Caldwell, B.; Capuano, V.; Carter, N.M.; Ch. A.; Enrlich, S.D.; Emmerson, P.T.; Entian, K.D.; Errington, J.; Fabret, C.; Ferrari, E. Natubras: Foulger, D.; Fritz, C.; Fujita, M.; Fujita, Y.; Fuma, S.; Galizzi, A.; Galler iech, J.; Harwod, C.R.; Henaut, A.; Hilbert, H.; Holsappel, S.; Hosono, S.; Hullo, M.F. Koetter, P.; Koningstein, G.; Krodph, S.; Kunamao, M.; Kurita, K.; Lapidus, A.; Laullo, M.F. Koetter, P.; Koningstein, G.; Krodph, S.; Kunamao, M.; Kurita, K.; Liu, H.; Masuda, S.; Maueell Y.; M.; Ogawa, K.; Ogiwara, A.; Oudega, B.; Park, S.H.; Parro, V.; Pohl, T.M.; Portetelle Rieger, M.; Rivolta, C.; Roche, B.; Rose, M.; Sadaie, Y.; Sato, T.; Scanlon, A; Authors: Schleich, S.; Schroeter, R.; Scoffene, F.; Sekiguchi, J.; Sekowska, A.; Sekowska, A.; H.; Winters, P.; Wipat, A.; Tanaka, T.; Terpetra, P.; Tognoni, A.; Tosato, V.; Uchiyama, T.; Winters, P.; Wipat, A.; Zumstein, E.; Yoshikawa, H.; Danchin, A.; Tata, K.; Yoshida, R.; Alterence number: A69580; MUID:98044033; PMID:9384377
A; Rocession: B69729
A; Recession: B69729
A; Recession: B69729
A; Variety: PCC 6803
C; Date: 25-Apr-1997 #sequence_revision 25-Apr-1997 #text_change 09-Jul-2004
C; Date: 25-Apr-1997 #sequence_revision 25-Apr-1997 #text_change 09-Jul-2004
C; Accession: S74889
R; Kaneko, T.; Sato, S.; Kotani, H.; Tanaka, A.; Asamizu, E.; Nakamura, Y.; Miyajima, N.; O, K.; Okumura, S.; Shimpo, S.; Takeuchi, C.; Mada, T.; Watanabe, A.; Yamada, M.; Yasuda DNA Res. 3, 109-136, 1996
A; Title: Sequence analysis of the genome of the unicellular cyanobacterium Synechocystie
                                                                                                                                                                                                                                                                                                                                                                                                                                         A,Molecule type: DNA
A,Residues: 1-100 <KAN>
A;Cross-references: UNIPROT:P73796; UNIPARC:UPI0000137DA2; EMBL:D90909; GB:AB001339; NIC
A;Note: the nucleotide sequence was submitted to the EMBL Data Library, June 1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Residues: I-105 <KUN>
A;Cross-references: UNIPROT:P75030; UNIPARC:UP1000060B96; GB:299122; GB:AL009126; NID:9
A;Experimental source: strain 168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Status: preliminary; nucleic acid sequence not shown; translation not shown; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              23.4%; Score 276.5; DB 2; Length 100; 58.0%; Pred. No. 4.3e-16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22.9%; Score 271; DB 2; Length 105; ilarity 54.5%; Pred. No. 1.3e-15; Conservative 16; Mismatches 27; Indels
                                                                                                                                                                                                                                                                                                                                                                                                A;Status: nucleic acid sequence not shown; translation not shown A;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             C;Superfamily: urease, gamma subunit; urease 11K chain homology F;1-100/Domain: urease 11K chain homology <U11>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     C;Superfamily: urease, gamma subunit; urease 11K chain homology
C;Keywords: hydrolase; metalloprotein
F;1-100/Domain: urease 11K chain homology <U11>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPI 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GATILISRDEVMEGVPEMLPEVQVEATFPDGTKLVTVHEPI 99
                                                                                                                                                                                                                                                                                                                          A;Reference number: S74322; MUID:97061201; PMID:8905231
A;Accession: S74889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 19; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              urease (gamma subunit) ureA - Bacillus subtilis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     58; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local Similarity
Les 61; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
```

9

Gaps

1;

66

Length 100; Indels

```
helicobacte
helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         anopheles g
helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          helicobacte
helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            campylobact
                                                                                                                                                                                                                            (without alignments)
1836.687 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sulfolobus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                          November 28, 2005, 07:57:42; Search time 86.8136 Seconds
                                                                                                                                                                                                                                                                                                                                                                                        1 VKLTPKEQEKFLLYYAGEVA.....ADERHKHKALDKAKSHGFIK 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        08 rnus
093nj1
093nj1
093ni5
093ni8
093385
093385
093nj2
093nj2
093nj2
093nj2
093nj2
093nj2
093nj2
093nj2
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
093nj3
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           093pj5
0972v9
05fb24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            08gh98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q9zmz4
GenCore version 5.1.6 (c) 1993 - 2005 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Potal number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2166443 seqs, 705528306 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q8RNUS HELPY
Q93NJ1 HELPY
UREA HELPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       093NĪ3-HELPY
093NI5-HELPY
093NI8-HELPY
0932S5-HELPY
093NJ0-HELPY
093NJ0-HELPY
093NJ0-HELPY
093NJ1-HELPY
093NJ7-HELPY
093NJ7-HELPY
093NJ1-HELPY
093NJ1-HELPY
093NJ1-HELPY
093NJ1-HELPY
093NJ1-HELPY
093NJ1-HELPY
093NJ1-HELPY
093NJ1-HELPY
093NJ1-HELPY
093NJ1-HELPY
093NJ1-HELPY
093NJ1-HELPY
093NJ1-HELPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HĒLPY
I3 HELPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                             - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                            BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        UniProt 05.80:*
1: uniprot sprot:*
2: uniprot trembl:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                              US-09-904-994B-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length
                              Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          50.5
4 4 4 6 .0
5 .0
4 4 5 .0
4 1 2 .2
6 .1
6 .1
7 .2
8 .2
1 .6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           613.52
6113.5
6113.5
6111.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
6110.5
61
                                                                                                                                                                                                                                                                                                                           Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score
                                                                                                                                OM protein
                                                                                                                                                                                                                                                                                                                                                                                               Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Result
```

141	Q9ryj3 deinococcus O4zudl pseudomonas	Q7xac5 glycine max	P07374 canavalia e	Q9r8r4 helicobacte	Q8kiy9 helicobacte	Q8kj05 helicobacte	Q9r8r2 helicobacte	Q8kiz9 helicobacte	Q8khj0 helicobacte	Q8kiz1 helicobacte	Q8w316 oryza sativ	Q6i6i6 campylobact
URE23 PSESM	OREZ3 DEIRA	Q7XAC5 SOYBN	UREA CANEN	Q9R8R4 HELHP	Q8KIY9 HELHE	Q8KJ05 HELHE	Q9R8R2 HELHP	Q8KIZ9 HELBI	Q8KHJ0 HELHE	Q8KIZ1 HELHE	OBW3L6 ORYSA	Q61616_CAMLA
٦,	٦,	1 (1	٦	~	~	~	~	7	~	N	N	7
231	228	838	840	185	176	177	185	164	172	179	843	190
41.1	4, 4 0. 0 0. 0	37.6	37.2	36.4	36.3	36.2	36.2	36.1	36.1	36.1	36.1	36.0
485	483	444.5	439.5	429.5	429	428	427.5	426	426	426	426	425
32	33	3.5	36	37	38	39	40	41	42	43	44	45

ALIGNMENTS

```
This Swiss-Prot entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use as long as its content is in no way modified and this statement is not
                                                                                                                                                                                                                                                                                                                                             similarity).
-!- SUBCELLULAR LOCATION: Cytoplasmic (By similarity)
-!- SUBCELLULAR LOCATION: Cytoplasmic (By similarity)
-!- SIMILARITY: In the N-terminal section; belongs to the urease gamma
-!- SIMILARITY: In the C-terminal section; belongs to the urease beta
subunit family.
                                                                                                                                                                                                                                             Zhu J., Chang Y.F.; "Cloning and characterization of Helicobacter bizzozeronii urease gene
                                                 29-MAR-2004 (Rel. 43, Created)
29-MAR-2004 (Rel. 43, Last sequence update)
13.5EP-2005 (Rel. 48, Last annotation update)
Urease alpha subunit (EC 3.5.1.5) (Urea amidohydrolase alpha subunit).
                                                                                                                                                Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                               (B
                                                                                                                                                                                                                                                                                                                                                                                                                                          subunit ramily.
-!- CAUTION: In Helicobacter the alpha subunit is what is known,
other bacteria as the beta subunit.
                                                                                                                                                                                                                                                                                         Submitted (DEC-2000) to the EMBL/GenBank/DDBJ databases. 
-!- CATALYTIC ACTIVITY: Urea + H(2)O=CO(2) + 2 NH(3). 
-!- SUBNNIT: Heterodimer of an alpha subunit and a beta subunit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Urease beta.
4567707785648843 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL; AF330621; AA015373.1; -; Genomic_DNA. HSSP; P14916; 1E92.
SMR; OGGH96, 1-224.
HAMAP; MF 00739; fused; 1.
InterPro; IPR002019; Urease_Beta.
InterPro; IPR002026; Urease_gamma_beta.
InterPro; IPR002025; Urease_gamma_beta.
Fam; PF00549; Urease_gamma_beta.
Pfam; PF00547; Urease_gamma_beta; 1.
ProDom; PD001225; Urease_gamma_beta; 1.
ProDom; PD00236; Urease_gamma_beta; 1.
ProDom; PD00236; Urease_gamma, 1.
TIGRRAMS; TIGR00192; urease_beta; 1.
TIGRRAMS; TIGR00192; urease_beta; 1.
                 234 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Urease gamma.
                 PRT;
                                                                                                                                                                                                                           NUCLEOTIDE SEQUENCE [GENOMIC DNA].
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         25720 MW;
                                                                                                                                       Helicobacter bizzozeronii.
                 STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           234 AA;
                                                                                                                                                                                         NCBI_TaxID=56877;
                                                29-MAR-2004
29-MAR-2004
13-SEP-2005
UREA HELBI
ID UREA HELBI
                                                                                                                           Name=ureA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REGION
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               removed.
                                Q8GH98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REGION
```

```
Hydrolase.
REGION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This Swiss-Prot entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the European Bioinformatics Institute. There are no restrictions on its use as long as its content is in no way modified and this statement is not
                                                                                                                                                                                                                                 120 TLNAGKQATTLEVHNKGDRPVQVGSHFHFFEVNKLLEFDREKAYGKRLDIASGTAVRFEP 179
                                                                                                                                                                                                       61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKA-GEVKFGCDKDI 119
                                                                                                                                                                                                                                                                                                    ELNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGA 179
                                                                                                                                                            9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Solnick J.V., O'Rourke J., Lee A., Tompkins L.S.;
"Molecular analysis of urease genes from a newly identified uncultured species of Helicobacter.";
Infect. Immun. 62:1631-1638(1994).
-!- CATALYTIC ACTIVITY: Urea + H(2)O = CO(2) + 2 NH(3).
-!- SUBCELLULAR LOCATION: Cytoplasmic (By similarity).
-!- SUBCELLULAR LOCATION: Cytoplasmic (By similarity).
-!- SIMILARITY: In the N-terminal section; belongs to the urease gamma
                                                                                                                                         subunit family. SIMILARITY: In the C-terminal section; belongs to the urease beta subunit family.
                                                                                                               1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-NOV-1995 (Rel. 32, Last sequence update)
13-SEP-2005 (Rel. 48, Last annotation update)
Urease alpha subunit (EC 3.5.1.5) (Urea amidohydrolase alpha subunit)
                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SUDULLI TABLIY. CAUTION: In Helicobacter the alpha subunit is what is known, in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
NCBI_TaxID=35817;
                                                                    2;
                     Length 234;
                                                                                                                                                                                                                                                                                                                                                                                         GQTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                        55; Indels
                     Score 652; DB 1;
Pred. No. 9.4e-47;
           55.2%; Score 57.3%; Pred. No. 9.4e-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          234 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HAMAP: Mr. 00739; fused; 1.
InterPro; IPR002019; fused beta.
InterPro; IPR002026; Urease gamma reg.
InterPro; IPR002026; Urease gammabeta.
Pfam; PF00699; Urease Deta; 1.
Pfam; PF00699; Urease gamma; 1.
ProDom; PD002126; Urease beta; 1.
ProDom; PD002126; Urease beta; 1.
ProDom; PD002136; Urease beta; 1.
TIGRFAMS; TIGR00192; urease beta; 1.
TIGRFAMS; TIGR00193; urease_beta; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL; L25079; AAA65722.1; -; Genomic_DNA HSSP; P14916; 1E9Z.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   other bacteria as the beta subunit.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               [1]
NUCLEOTIDE SEQUENCE (GENOMIC DNA).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE=94222523; PubMed=8168924;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (Rel. 32, Created)
(Rel. 32, Last seg
                                                                  Matches 129; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Helicobacter heilmannii.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SMR; P42822; 1-224
                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HELHE
                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                           180
                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           removed
                                             Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              <u>-</u>:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         --
                                                                                                                                                     g
                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           The part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the part of the pa
                                                                                                                                                                                                                                                                                 8
```

```
between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use as long as its content is in no way modified and this statement is not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This Swiss-Prot entry is copyright. It is produced through a collaboration
                                                                                                                                                                                                                                                                                                                                                                                             61 GRTLLKADDVMPGVAHMIHEVGIEAGFPDGTKLVTIHTPVEAGSDKLAPGEVILK-NEDI 119
                                                                                                                                                                                                                                                                                                                                                            61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEP-DEHFKAGEVKFGCDKDI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120 ELNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGA 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         similarity).
-!- SUBCELLULAR LOCATION: Cytoplasmic (By similarity).
-!- SIMILARITY: In the N-terminal section; belongs to the urease gamma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
10-MAY-2000 (Rel. 47, Last annotation update)
10-MAY-2005 (Rel. 47, Last annotation update)
Urease alpha subunit (EC 3.5.1.5) (Urea amidohydrolase alpha subunit).
Name-ureA; Synonyms=hpuA; OrderedLocusNames=JHP0068;
Helicobacter pylori J99 (Campylobacter pylori J99).
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
                                                                                                                                                                                                                                                                      subunit family.
-!- SIMILARITY: In the C-terminal section; belongs to the urease beta subunit family.
                                                                                                                                                                                                                                    1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WUCLEOTIDE SEQUENCE [LARGE SCALE GENOMIC DNA].
MEDLINE=99120557; PubMed=9923682; DOI=10.1038/16495;
Alm R.A., Ling L.-S.L., Moir D.T., King B.L., Brown E.D., Doig P.C., Smith D.R., Noonan B., Gulid B.C., delonge B.L., Carmel G., Tummino P.J., Caruso A., Uria-Nickelsen M., Mills D.M., Ives C., Trust T.J.;

Trust T.J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -!- CAUTION: In Helicobacter the alpha subunit is what is known, in other bacteria as the beta subunit.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "Genomic sequence comparison of two unrelated isolates of the human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -!- CATALYTIC ACTIVITY: Urea + H(2)O = CO(2) + 2 NH(3).
-!- SUBUNIT: Heterodimer of an alpha subunit and a beta subunit
                                                                                                                                                                              5
                                                                                                                    DB 1; Length 234;
                                                                                                                                                                              59; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                180 GQTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Urease gamma.
Urease beta.
; CD5889E3D789C7F8 CRC64;
                                                                                                                                                                          41; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; AE001446; AAD05652.1; -; Genomic_DNA.
PIR; B71977; B71977.
                                                                                                                52.7%; Score 622;
54.7%; Pred. No. 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gastric pathogen Helicobacter pylori.";
Nature 397:176-180(1999).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HSSP; P14916; 1E9Z.
SMR; Q9ZMZ4; 1-238.
SMP; PF C07739; desed; 1.
InterPro; IPR002019; Uresse_beta.
102 Ur
234 Ur
25746 MW;
                                                                                                                                               Best Local Similarity 54.7 Matches 123; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STANDARD:
   1 1
103 2
234 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=85963;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          UREA HELPJ
                              REGION
SEQUENCE
                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   removed
```

Gaps

ï

셤 ò g ò 엄 8

```
61 GRILLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 CMHFLKKDEVMPGVGNMVPDLGVEATPPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKINQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Helicobacter pylori (Campylobacter pylori).
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
51.8%; Score 611.5; DB 2; Length 238;
Best Local Similarity 52.7%; Pred. No. 2.5e-43;
Matches 118; Conservative 43; Mismatches 62; Indels 1;
GO; GO:0009039; F:urease activity; IEA.

GO; GO:0006807; P:nitrogen compound metabolism; IEA.

InterPro; IPR002013; Urease_beta.

InterPro; IPR002026; Urease_gamma_beta.

InterPro; IPR002026; Urease_gamma_reg.

Pfam; PF00699; Urease_beta; 1.

Pfam; PF00699; Urease_gamma; 1.

PTRSF; PIRSF001225; Urease_gammabeta; 1.

ProDom; PD002316; Urease_gamma; 1.

ProDom; PD002319; Urease_gamma; 1.

Rrobom; PTGRPAM; TIGR00192; urease_beta; 1.

TIGRFAMs; TIGR00193; urease_beta; 1.

TIGRFAMs; TIGR00193; urease_beta; 1.

SEQUENCE 238 AA; 26710 MW; E934A6512A559B28 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        : : |:|| :|| :|| || || || BEKSVELIDIGGNRRIFGFNALVDRQADNESKKIALHRAKERGF 223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Chu C., Ou J.T.;
Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.
EMBL; AR373558; AAK69724.1; -; Genomic_DNA.
HSSP: P14916; 1E9Y.
SWR; Q93NJ1; 1-238.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EE82BF861D03BA50 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GO; GO:0005737; C:cytoplasm; IEA.
GO; GO:0016151; F:nickel ion binding; IEA.
GO; GO:000193; F:urease activity; IEA.
GO; GO:0006807; F:nitrogen compound metabolism; IEA.
InterPro; IPR002019; Urease_gammabeta.
InterPro; IPR008223; Urease_gammabeta.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 611.5; DB 2;
Pred. No. 2.5e-43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pfam: PF00699; Urease_beta; 1.
Pfam: PF00547; Urease_gamma; 1.
PINSF: PINSF001225; Urease_gammabeta; 1.
ProDom; PD002316; Urease_beta; 1.
ProDom; PD002319; Urease_gamma; 1.
TIGRFAMS; TIGR00192; urease_gam; 1.
SEQUENCE 238 AA; 26672 NW; EE82BF861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               51.8%;
53.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q93NJ1_HELPY PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Urease protein UreA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NCBI_TaxID=210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Name=ureA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       093NJ1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        D93NJ1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOR BERRY OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STREET OF STR
         82222222222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 GRTLLKPDDVMDGVASMIHEVGIEAMPPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Opazo P., Muller I., Rollan A., Valenzuela P., Yudelevich A.,
Garcia-de la Guarda R., Urra S., Venegas A.;
"Serological response to Helicobacter pylori recombinant antigens in
Chilean infected patients with duodenal ulcer, non-ulcer dyspepsia and
gastric cancer."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 VKLIPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDINE 22121498; PubMed=12125208;
Muller I., Medina-Selby A., Palacios J.L., Martinez P., Opazo P.,
Muller I., Medina-Selby A., Palacios J.L., Martinez P., Opazo P.,
Bruce B., Mancilla M., Valenzuela P., Yudelevich A., Venegas A.;
Eloning and comparison of ten gene sequences of a Chilean H. pylori
strain with other H. pylori strains revealed higher variability for
VacA and CagA virulence factors.";
Biol. Res. 35:67-84(2002).
Biol. Res. 35:67-84(2002).
HSSP: P14916; 1E9Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Helicobacter pylori (Campylobacter pylori).
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    51.9%; Score 613.5; DB 1; Length 238; 53.1%; Pred. No. 1.7e-43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                62; Indels
                                                                                                                                                                                                                                                                                                                                                                                                     238 AA; 26568 MW; A10B9DC4156C0561 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Last sequence update)
Last annotation update)
   InterPro; IPR002026; Urease_gamma_reg.
InterPro; IPR00823; Urease_gammabeta.
Pfam; PF00549; Urease_beta; 1.
Pfam; PF00547; Urease_gamma; 1.
PIRSF, PIRSF001225; Urease_gammabeta; 1.
ProDom; PD002326; Urease_beta; 1.
ProDom; PD002319; Urease_gamma; 1.
TIGRPAMS; TIGR00192; urease_beta; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       42; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SMR; QBRNUS; 1-238.
GO; GO:0005737; C:cytoplasm; IEA.
GO; GO:0016151; F:nickel ion binding; IEA.
                                                                                                                                                                                                                                                                                                                                         Urease gamma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Created)
                                                                                                                                                                                                                                                                                                                                                                             Urease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRAIN=CH-CTXI;
MEDLINE=20123532; PubMed=10660136;
                                                                                                                                                                                                                                                                                                        Complete proteome; Hydrolase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-JUN-2002 (TrEMBLrel. 21,
01-JUN-2002 (TrEMBLrel. 21,
01-MAR-2004 (TrEMBLrel. 26,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity 53.19
Matches 119; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QBRNUS HELPY PRELIMINARY;
QBRNUS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APMIS 107:1069-1078(1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUCLEOTIDE SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Urease A subunit.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NCBI_TaxID=210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRAIN=CH-CTX1
                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                         REGION
```

RESULT 4

QRENUE HE

10 01-0

OR 01-0

DT 01-0

DT 01-0

DT 01-0

OC 08 Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Heli

OC Hel

Length 238;

```
MEDLINE=90264448; PubMed=2188975;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     urease.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     removed.
                                                                                                                                                                                                                                                                                                                pylori.
61 GRTLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEVNGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                   120 INEGKKAVSVKVKAVGDRPVQIGSHFHFFEVNRYLDFDREKTFGKRLDIASGTTVRFEPG 179
                                                                                                                                                                                     61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                          Labigne A., Cussac V., Courcoux P., "Shuttle cloning and nucleotide sequences of Helicobacter pylori genes responsible for urease activity."; J. Bacteriol. 173:1920-1931(1991).
                                                             1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-APR-1990 (Rel. 14, Created)
01-MAY-1992 (Rel. 22, Last sequence update)
13-SEP-2005 (Rel. 48, Last annotation update)
Urease alpha subunit (EC 3.5.1.5) (Urea amidohydrolase alpha subunit)
Name=ureA; Synonyms=hpuA; OrderedLocusNames=HP0073;
   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Clayton C.L., Pallen M.J., Kleanthous H., Wren B.W., Tabaqchali S., "Nucleotide sequence of two genes from Helicobacter pylori encoding for urease subunits.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRAIN=26895 / ATCC 700392;

WREDLINE=97394467; PubMed=9252185; DOI=10.1038/41483;

Tomb J.-F. White O., Kerlavage A.R., Clayton R.A., Sutton G.G.,
Fleischmann R.D., Ketchum K.A., Klenk H.-P., Gill S.R.,
Dougherty B.A., Nalson K.E., Quackenbush J., Zhou L., Kirkness E.F.,
Dougherty B.A., Nelson K.E., Quackenbush J., Zhou L., Kirkness E.F.,
Glodek A., McKenney K., FitzGerald L.M., Lee N., Adams M.D.,
Hickey E.K., Berg D.E., Gocayne J.D., Utterback T.R., Peterson J.D.,
Kelley J.M., Cotton M.D., Weidman J.F., Fujii C., Bowman C.,
Watthey L., Wallin E., Hayes W.S., Borodovsky M., Karp P.D.,
Smith H.O., Fraser C.M., Venter J.C.,
"The complete genome sequence of the gastric pathogen Helicobacter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Helicobacter pylori (Campylobacter pylori).
Bacteria, Proteobacteria, Epsilonproteobacteria, Campylobacterales,
Helicobacteraceae, Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Akada J.K., Shirai M., Takeuchi H., Tsuda M., Nakazawa T.; "The urease operon in Helicobacter pylori is regulated by decay of
۲;
                                                                                                                                                                                                                                                                                                                                                                                                                                       181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Submitted (SEP-1999) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   [3]
NUCLECTIDE SEQUENCE [LARGE SCALE GENOMIC DNA].
STRAIN=26695 / ATCC 700392;
NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE: NOTE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                238 AA
43; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Nucleic Acids Res. 18:362-362(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=90221820; PubMed=2326167;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=91161505; PubMed=2001995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Nature 388:539-547(1997).
Matches 119; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PROTEIN SEQUENCE OF 1-20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              [4]
NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NCBI_TaxID=210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRAIN=CPM630
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STRAIN=HPK5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             UREA HELPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRAIN=85P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  180
                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              pylori.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 6

UREA HELPY
UREA HELPY
UREA HELPY
DT 01-APR
DT 01-APR
DT 11-SEP
DE Urease
GN Helico
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC Bacter
OC 
                                                                                                                 셤
                                                                                                                                                                              ò
                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                   업
                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
```

```
This Swiss-Prot entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use as long as its content is in no way modified and this statement is not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -!- SUBCELLULAR LOCATION: Cytoplasmic.
-!- MSCELLANGOUS: Oligomerization may protect the enzyme against denaturation in an acidic environment.
-!- SIMILARITY: In the N-terminal section; belongs to the urease gamma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          subunit family.
-!- SIMILARITY: In the C-terminal section; belongs to the urease beta subunit family.
-!- CAUTION: In Helicobacter the alpha subunit is what is known, in other bacteria as the beta subunit.
                                                                                                                                                                                                                                                                               X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS), AND SUBUNIT STRUCTURE. MEDLINB=2125477; PubMed=1137367; DOI=10.1038/88633; HA N -C., Oh S.-T., Sung J.Y., Cha K.A., Lee M.H., Oh B.-H.; Supramolecular assembly and acid resistance of Helicobacter pylori
                                                                                                                PROTEIN SEQUENCE OF 1-20.

PROTEIN SEQUENCE OF 1-20.

Hu L.T., Mobley H.L.T.

"Purification and N-terminal analysis of urease from Helicobacter
                                                                                                                                                                                                                                                                                                                                                                                                     Nat. Struct. Biol. 8:505-509(2001).
-1- CARALYIIC ACTIVITY: Urea + H(2)O = CO(2) + 2 NH(3).
-1- SUBUNIT: Heterobexamer of 3 alpha and 3 beta subunits. Four heterohexamers assemble to form a 16 nm spherical complex.
G.I., Blaser M.J.;
urease from Helicobacter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL, X17079; CAA34932.1; -; Genomic_DNA.
EMBL, M60398; AAA25020.1; -; Genomic_DNA.
EMBL, A08816; CAA00810.1; -; Unassigned_DNA.
EMBL, AE001396; CAA00622.1; -; Unassigned_DNA.
EMBL, AE00129; AAD07144.1; -; Genomic_DNA.
EMBL, AB032429; BAA84532.1; -; Genomic_DNA.
Dunn B.E., Campbell G.P., Perez-Perez "Purification and characterization of
                                                     pylori.";
J. Biol. Chem. 265:9464-9469(1990)
                                                                                                                                                                                                                                   Infect. Immun. 58:992-998(1990).
```

```
61 CMHFLKKDEVMPGVGNMVPDLGVEATPPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GRILLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Helicobacter pylori (Campylobacter pylori).
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                            1,
                                                                                                                                                                                                                                                                                                                                                       DB 2; Length 238;
               GO, GO: 0005737; C: Cytoplasm; IEA.
GO; GO: 0005737; C: Cytoplasm; IEA.
GO; GO: 0016151; F: nickel ion binding; IEA.
GO; GO: 0006807; F: nitrogen compound metabolism; IEA.
InterPro; IPR002019; Urease_gammabeta.
InterPro; IPR002026; Urease_gammabeta.
InterPro; IPR002026; Urease_gammabeta.
InterPro; IPR005026; Urease_gamma_reg.
Pfam; PP00699; Urease_beta; 1.
PIRSF; PIRSF001225; Urease_gammabeta; 1.
ProDom; PD002319; Urease_gammabeta; 1.
ProDom; PD002319; Urease_gammabeta; 1.
ITGRPAMs; ITGR00192; urease_beta; 1.
ITGRPAMs; ITGR00193; urease_gamma; 1.
ITGRPAMs; ITGR00193; urease_gam; 1.
SEQUENCE 238 AA; 26586 MW; DFDBA17D016FC351 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      51.7%; Score 610.5; DB 2; Length 53.1%; Pred. No. 3e-43; artive 42; Mismatches 62; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Chu C., Ou J.T.; Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SMR; Gristor, 1-238.
GO; GO:0005737; C:cytoplasm; IEA.
GO; GO:001615; F:nickel ion binding; IEA.
GO; GO:001615; F:nickel ion binding; IEA.
GO; GO:0006807; F:nicrogen compound metabolism; IEA.
GO; GO:0006807; F:nitrogen compound metabolism; IEA.
InterPro; IPR002019; Urease_gamma_reg.
InterPro; IPR002019; Urease_gamma_reg.
Fram; PF00699; Urease_gamma_reg.
Fram; PF00699; Urease_gamma_reg.
Fram; PF00699; Urease_gamma_reg.
FroDom; PD00225; Urease_gamma_reg.
FroDom; PD00226; Urease_gamma_reg.
FroDom; PD00236; Urease_gamma_reg.
FroDom; PD00236; Urease_gamma_reg.
FroDom; PD00239; Urease_gamma_reg.
FroDom; PD00239; Urease_gamma_reg.
TIGRFAMS; TIGR00192; urease_beta; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     251AD890042A4262 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL; AF373568; AAK69734.1; -; Genomic_DNA.
HSSP; P14916; 1E9Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     26539 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-DEC-2001 (TrEMBLrel. 19, 01-DEC-2001 (TrEMBLrel. 19, 01-MAR-2004 (TrEMBLrel. 26,
                                                                                                                                                                                                                                                                                                                                                                                                  Matches 119; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q93NIS_HELPY PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                [1]NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Urease protein UreA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       238 AA;
                                                                                                                                                                                                                                                                                                                                                                             Sest Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Name=ureA;
                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE
  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61 GRTLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNOPEALAYISAHIMDEARRGKKTVAQLMEE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
Name=ureA;
Helicobacter pylori (Campylobacter pylori).
Helicobacteraceae; Froteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 1; Length 238;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 610.5; DB 1; Lens.:
Pred. No. 3e-43;
Contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the con
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Chu C., Ou J.T.,
Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.
EMBL; AF373570; AAK69736.1; -; Genomic_DNA.
HSSP; P14916; IEPY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          26540 MW; 4E77328669CD9A2D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       238 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               52.7%; Pred. ...
rive 43; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  51.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q93NI3 HELPY PRELIMINARY;
Q93NI3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches 118; Conservative
  NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       238 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Best Local Similarity
                                                                                                                                                                                                            120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HELPY
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
```

셤

ò

셤 ò g ઠે

ò

ò

```
InterPro; IPR002019; Urease beta.
InterPro; IPR008223; Urease gammabeta.
InterPro; IPR002026; Urease gamma_reg.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRT;
                                                                                                                   Created)
                                                                                                                                                                                              Bacteria, Proteobacteria, Epsilo
Helicobacteraceae, Helicobacter
                                                                                                                  01-DEC-2001 (TrEMBLrel. 19, 01-DEC-2001 (TrEMBLrel. 19, 01-FEB-2005 (TrEMBLrel. 29,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           52.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-DEC-2001 (TrEMBLrel. 19, 01-DEC-2001 (TrEMBLrel. 19, 01-FEB-2005 (TrEMBLrel. 29, Urease protein UreA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best_Local Similarity 52.7%
Matches 118; Conservative
                                                                                     Q933M9 HELPY PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q932SS_HELPY PRELIMINARY;
Q932SS;
                                                                                                                                                          Urease protein UreA.
                                                                                                                                                                                                                                                 NUCLEOTIDE SEQUENCE
                                                                                                                                                                                                                                                                                                              HSSP; P14916; 1E9Y.
                                                                                                                                                                                                                                                                                                                           Q933M9; 1-238.
                                                                                                                                                                                                                       NCBI_TaxID=210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Name=ureA;
                                                                                                                                                                       Name=ureA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 11
Q932S5 HELPY
1D Q932S5_H
AC Q932S5_D
DT 01-DEC-20
DT 01-DEC-20
DT 01-EBB-20
GN Name=ure pi
                                                                              Q933M9
                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                       g
   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 GRILLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTFIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                       LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                      9
                                                                  1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                   1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                       Helicobacter pylori (Campylobacter pylori).
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1;
                           ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           51.6%; Score 609.5; DB 2; Length 238; 52.7%; Pred. No. 3.7e-43; ive 43; Mismatches 62; Indels 1
   Length 238;
                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Chu C., Ou J.T.;
Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.
EMBL; AR373562; AAK69728.1; -; Genomic_DNA.
HSSP; P14916; 1E9Y.
SMR; Q93NI8; 1-238.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pfam; PF00547; Urease_gamma; 1.
PIRSF; PIRSF001225; Urease_gammabeta; 1.
ProDom; PD002326; Urease_beta; 1.
ProDom; PD002319; Urease_gamma; 1.
TIGRFAMS; TIGR00193; urease_gam; 1.
TIGRFAMS; TIGR00193; urease_gam; 1.
SEQUENCE 238 AA; 26553 MW; A5188AC7017F1261 CRC64;
                                                                                                                                                                                                           QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GO; GC:0005737; C:cytoplasm; IEA.
GO; GO:0016151; F:nickel ion binding; IEA.
GO; GO:0009039; F:ureae activity; IEA.
GO; GO:0006807; P:nitrogen compound metabolism; IEA.
                                                                                                                                                                                                                                                                                                                                         Last sequence update)
Last annotation update)
   DB 2;
                         62;
51.7%; Score 610.5; DB 52.7%; Pred. No. 3e-43; iive 43; Mismatches 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro; IPR002019; Urease beta.
InterPro; IPR008223; Urease gammabeta.
InterPro; IPR002026; Urease gamma_reg.
Pfam; PF00699; Urease beta; 1.
Pfam; PF00547; Urease_gamma, 1.
                                                                                                                                                                                                                                                                                                                             Created)
                                                                                                                                                                                                                                                                                                                         01-DEC-2001 (TrEMBLrel. 19, 01-DEC-2001 (TrEMBLrel. 19, 01-MAR-2004 (TrEMBLrel. 26,
                                                                                                                                                                                                                                                                                                  Q93NI8 HELPY PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches 118; Conservative
                         Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                       NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                 Urease protein UreA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity
             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=210;
                                                                                                                                                                                                         181
  Query Match
Best Local
                                                                                                                                                                                                                                                                                                             093NIB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                         원
                                                                                                                             g
                                                                                                                                                                              g
                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
```

```
61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 GRSLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                              Helicobacter pylori (Campylobacter pylori).
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ï
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             51.5%; Score 608.5; DB 2; Length 238;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181 OTRKVOLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Chu C., Ou J.T.;
Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64A0C32A043A8BD8 CRC64;
                                    : : |:|| :|| :|| || || || EEKSVELIDIGGNRRIFGFNALVDRQADNESKKIALHRAKERGF
181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GO; GO:0005737; C:cytoplasm; IEA.
GO; GO:0016151; F:nickel ion binding; IEA.
GO; GO:0009039; F:urease activity; IEA.
GO; GO:0006807; P:nitrogen compound metabolism; IEA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                            Last annotation update)
                                                                                                                                                                                                                                                                                             Last sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; Pred. No. 4.5e-43; 43; Mismatches 62
                                                                                                                                                                                                           238 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL; AF373580; AAK69746.1; -; Genomic_DNA.
EMBL; AF373572; AAK69738.1; -; Genomic_DNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pfam; PF00699; Urease_beta; 1.
Pfam; PF00699; Urease_gamma; 1.
PIRSF; PRSF001225; Urease_gammabeta; 1.
ProDom; PD002326; Urease_beta; 1.
ProDom; PD002319; Urease_beta; 1.
TIGREAMs; TIGR00192; urease_beta; 1.
TIGREAMs; TIGR00193; urease_gam; 1.
SEQUENCE 238 AA; 26599 MW; 64A0C32A0
```

```
NCBI_TaxID=210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Name=ureA;
                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 13
Q93NJO_HELPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    05NE60
8999999999999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61 GRTLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121 INAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 MKLTPKELDKLMLHYAGELARKRKEKGIKLNYVEAVALISAHIMEBARAGKKSAAELMOE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                 Bacteria, Proteobacteria, Epsilonproteobacteria, Campylobacterales, Helicobacteraceae, Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Helicobacter pylori (Campylobacter pylori).
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 2; Length 238;
                                                                                                                                                                                                                                                                                                                                                                  GO; GO: 0005737; C: cytoplasm; IEA.
GO; GO: 0005737; C: cytoplasm; IEA.
GO; GO: 0005039; F: utrease activity; IEA.
GO; GO: 0009039; F: utrease activity; IEA.
GO; GO: 0006807; P: nitrogen compound metabolism; IEA.
InterPro; IPRO02019; Urease_Deta.
InterPro; IPRO02026; Urease_gammabeta.
InterPro; IPRO05026; Urease_gammabeta.
InterPro; IPRO05026; Urease_gammabeta.
InterPro; IPRSF001225; Urease_gammabeta; I.
PIRSF; PIRSF001225; Urease_gammabeta; I.
ProDom; PD002319; Urease_gammabeta; I.
ITGRFAMS; ITGR00199; urease_beta; I.
ITGRFAMS; ITGR00199; urease_gam; I.
ITGRFAMS; ITGR00199; urease_gam; I.
SEQUENCE 238 AA; 26613 MM; E4A2917D016FDBDB CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           62: Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Chu C., Ou J.T.;
Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.
EMBL; AR313569; AAK69735.1; -; Genomic_DNA.
HSSP; P14916; 1B9Y.
SWR; Q93N14; 1-238.
                                                                                                                                                            (APR-2001) to the EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2004 (TEMBLrel. 26, Last annotation update)
Urease protein UreA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             51.4%; Score 607.5; DB 2; 52.7%; Pred. No. 5.4e-43; iive 43; Mismatches 62;
                                                                                                                                   Chu C., Ou J.T.;
Submitted (APR-2001) to the EMBL/GenBank/DDBJ
EMBL; AF373554; AAK69750.1; -; Genomic_DNA.
EMBL; AF373559; AAK69723.1; -; Genomic_DNA.
EMBL; AF373559; AAK69723.1; -; Genomic_DNA.
EMBL; AF373581; AAK69745.1; -; Genomic_DNA.
EMBL; AF373582; AAK69749.1; -; Genomic_DNA.
EMBL; AF373582; AAK69749.1; -; Genomic_DNA.
EMBL; AF373582; AAK69748.1; -; Genomic_DNA.
EMSP; P14916; 1E9Y.
SWR; Q93255; 1-238.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    238 AA
Helicobacter pylori (Campylobacter pylori)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity 52.73
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q93NI4 HELPY PRELIMINARY;
Q93NI4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NUCLEOTIDE SEQUENCE.
                                                                                                                  NUCLEOTIDE SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=210;
                                                                    NCBI_TaxID=210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Name=ureA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         HELPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 12
093N14 HELD
10 093N1
AC 093N1
AC 093N1
DT 01-DE
DT 01-DE
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
DT 01-ME
d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
```

```
61 GRSLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Helicobacter pylori (Campylobacter pylori).
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 2; Length 238;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       51.4%; Score 607.5; DB 2; Lengun
52.2%; Pred. No. 5.4e-43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Chu C., Ou J.T.;
Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.
EMBL; AF773560; AAK69726.1; -; Genomic_DNA.
HSSP; P14916; 1E9Y.
GO; GO:0005737; C:cytoplasm; IEA.

GO; GO:00151; F:urickel ion binding; IEA.

GO; GO:0009039; F:urease activity; IEA.

GO; GO:0009039; F:urease activity; IEA.

GO; GO:000607; P:uritrogen compound metabolism; IEA.

InterPro; IRR002019; Urease_beta.

InterPro; IRR002026; Urease_gammabeta.

InterPro; IRR002026; Urease_gamma_reg.

PEAm; PR00699; Urease_gamma_reg.

PEAm; PR00699; Urease_gamma; 1.

PINSF; PINSF001225; Urease_gammabeta; 1.

PINSF; PINSF001225; Urease_gammabeta; 1.

PINSF; PINSF001225; Urease_beta; 1.

PINSF; PINSF001225; Urease_beta; 1.

PRODOM; PD002319; Urease_gamma; 1.

IGRRAMS; TIGR00195; Urease_beta; 1.

PRODOM; PAMP; PINSF00195; Urease_gamma; 1.

ITGRRAMS; TIGR00195; Urease_gamm; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                      CA6677D2788BDD2E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5C082660AAC88469 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SMR; Q93NJO; 1-238.

GO; GO:0005737; C:Cytoplasm; IEA.

GO; GO:0016151; F:nickel ion binding; IEA.

GO; GO:0009039; F:urease activity; IEA.

GO; GO:0006807; P:nitrogen compound metabolism; IEA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
Urease protein UreA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          238 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     InterPro; IPR002019; Urease_Deta.
InterPro; IPR002023; Urease_gammabeta.
InterPro; IPR002026; Urease_gammabeta.
InterPro; IPR002026; Urease_gammareg.
Pfam; PF00699; Urease_beta; 1.
Pfam; PF00647; Urease_gamma; 1.
Pr050m; PD002316; Urease_beta; 1.
Pr050m; PD002319; Urease_gamma; 1.
TIGRFAMS; TIGR00193; Urease_gamma; 1.
TIGRFAMS; TIGR00193; urease_gam; 1.
SEQUENCE 238 AA; 26629 WW; 5C082660A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Best Local Similarity 52.28
Matches 117; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q93NJO HELPY PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUCLEOTIDE SEQUENCE.
```

```
Search completed: November 28, 2005, 08:19:44 Job time : 88.8136 secs
                                                                                                                                                                                  RESULT 15
08477
AC 08477
AC 08477
AC 08477
DT 01-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 011-JU
DT 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ଚ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                            g
       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 GRTLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 GRTLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTFIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61 CMHFLKKDEVWPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                            61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIBPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                            LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                    9
                                                                                                                                                                                         1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Helicobacter pylori (Campylobacter pylori).
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1;
                                                                               ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       51.4%; Score 607.5; DB 2; Length 238; 52.7%; Pred. No. 5.4e-43; ive 43; Mismatches 62; Indels 1
51.4%; Score 607.5; DB 2; Length 238; 52.7%; Pred. No. 5.4e-43; ive 43; Mismatches 62; Indels 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Chu C., Ou J.T.;

Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.

R EMBL; AR373556; AAK69722.1; -; Genomic_DNA.

EMBL; AR373556; AAK69722.1; -; Genomic_DNA.

R EMBL; O33NJ2; 1-238.

R GO; GO:0005737; C:cytoplasm; IEA.

GO; GO:0009039; Furease activity; IEA.

R GO; GO:0009039; Furease activity; IEA.

R GO; GO:0006807; P:nickel ion binding; IEA.

R GO; GO:0009039; P:urease_Deta.

InterPro; IPR00223; Urease_Deta.

InterPro; IPR00223; Urease_Damma_reg.

R InterPro; IPR00223; Urease_Gamma_reg.

R Pfam; PF00639; Urease_Gamma_reg.

R Pfam; PF00639; Urease_Gamma_reg.

R ProDom; PD002316; Urease_Gamma_reg.

R ProDom; PD002316; Urease_Gamma; 1.

R ProDom; PD002319; Urease_Gamma; 1.

R TIGRRAMS; TIGR00192; urease_Deta; 1.

TIGRRAMS; TIGR00193; urease_Bam; 1.

R SEQUENCE 238 AA; 26629 WW; E4A2917D17B5DBDB CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  238 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q93NJ2 HELPY PRELIMINARY;
Q93NJ2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Local Similarity 52.73
Matches 118; Conservative
                                     Best Local Similarity 52.73
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Urease protein UreA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        [1] <sup>—</sup>
NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Name=ureA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HELPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 14

Q93NJ2 HEL

10 Q93NJ3

AC Q93NJ3

DT 01-DE

DT 01-DE

DT 01-DE

DT 01-MA

DE Ureas

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

OC Bacte

O
                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
```

```
121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                           Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales; Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         51.3%; Score 605.5; DB 2; Length 238; 52.7%; Pred. No. 8e-43; Live 42; Mismatches 63; Indels 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             : : |:|| :|| :|| || || || || || || EEKSVELIDIGGNRRIFGFNALVDRQADNESKKIALHRAKERGF 223
  224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRAIN=Iran-HP031;

Karimi Arzenani M., Mohammadi M.;
Submitted (JAN-2003) to the EMBL/GenBank/DDBJ databases.
EMBL; AY227442; AA034402.1; -; Genomic_DNA.
HSSP; P14916; 1E9Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         238 AA; 26491 MW; 6384770531FCB38C CRC64;
181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF
                             SNR, Q84F76; 1-238.

GO; GO: 0005737; C: Cytoplasm; IEA.
GO; GO: 0016737; F: Ptycolasm; IEA.
GO; GO: 0016151; F: nickel ion binding; IEA.
GO; GO: 0009039; F: urease activity; IEA.
GO; GO: 0008039; F: urease activity; IEA.
GO; GO: IRRO2019; J: Tease beta.
InterPro; IPR008223; Urease Deta.
InterPro; IPR008223; Urease gammabeta.
InterPro; IPR0082026; Urease gamma reg.
                                                                                                                                                                                                                             Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                                238 AA
                                                                                                                                                                                                                                                                                                                                                             Helicobacter pylori (Campylobacter pylori)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pfam; PF00699; Urease_beta, 1.
Pfam; PF00547; Urease_gamma; 1.
PIRSF; PIRSF001225; Urease_gammabeta; 1.
ProDom; PD002326; Urease_beta; 1.
ProDom; PD002319; Urease_gamma; 1.
TIGRFAMS; TIGR00192; urease_beta; 1.
                                                                                                                                                                                PRT;
                                                                                                                                                                                                                             01-JUN-2003 (TrEMBLrel. 24, 01-JUN-2003 (TrEMBLrel. 24, 01-MAR-2004 (TrEMBLrel. 26,
                                                                                                                                                                                                                                                                                                           Urease alpha (EC 3.5.1.5).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best Local Similarity 52.74
Matches 118; Conservative
                                                                                                                                                                             Q84F76 HELPY PRELIMINARY;
Q84F76;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SECUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
```

```
Adj58238 Urease su
Adj58240 UreaseXY
Adj58241 UreaseXY
Adj58244 UreaseXY
Adj58244 UreaseXY
Add37849 H. bizzoz
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Part of p
H. pylori
Helicobac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Urease A
Hylicobac
H. pylori
Helicobac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        H. pylori
Salmonell
A subunit
Helicobac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Helicobac
                                                                                                                          November 28, 2005, 07:55:02 ; Search time 73.7204 Seconds (without alignments) 1346.976 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pred. No. Is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                              1181
1 VKLTPKEQEKFLLYYAGEVA......ADERHKHKALDKAKSHGFIK 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Aau35875 |
Aar04579 |
Aaw07193 |
Aau35693 |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Aeb55115 | Adm28643 | Adm28643 |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Aam49645
Aar12515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Aar67375
GenCore version 5.1.6 (c) 1993 - 2005 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                          hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                2443163 seqs, 439378781 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                        using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADJ58244
ADQ37849
AAU35875
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAM49644
AEB55115
ADS09178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAR 645
AAM 49645
AAR 12515
AAB 5255
ABU 51893
AAR 74336
AAR 6729
AAR 6729
AAM 49646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAW07193
AAU35693
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ADJ58241
ADJ58247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ADJ58238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAR04579
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ADM28643
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                genese@2000s.*
genese@2001s.*
genese@2002s:*
genese@2003s:*
genese@2003bs:*
genese@2004s:*
                                                                                                                                                                                                                                                                                                               BLOSUM62
Gapop 10.0 , Gapext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         geneseqp1980s:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                geneseqp1990s:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           seq length: 0
seq length: 200000000
                                                                                                                                                                                                                          US-09-904-994B-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A Geneseq 21:*
                                                                                     - protein search,
                    Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ŏ
                                                                                                                                                                                                                                                 score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1181
1174
1174
1174
1170
613.5
610.5
610.5
610.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
600.5
                                                                                                                                                                                                                                                                                                               Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score
                                                                                                                                                                                                                                                                                                                                                                                                                               Total number
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Minimum DB
Maximum DB
                                                                                        protein
                                                                                                                                                                                                                                                                          Sequence:
                                                                                                                                                                                                                                                                                                                                                                                     Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Database
                                                                                                                                                                                                                          Title:
Perfect
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Maximum
                                                                                                                                    Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Result
```

Murine ur	Protein e	Protein e	Protein e	Staphyloc	Protein e	Protein e	Protein e	Protein e	Protein e	P. mirabi	Urease pr	Coil form	C. ensifo	Helicobac	Canavalia	C. posada	Klebsiell	Klebsiell	Klebsiell	Protein e
Aam49648	Abu42650	Abu42523	Abu41210	Aau33952	Abu20285	Abu40327	Abu27583	Abu17114	Abu22153	Aar67376	Aaw14497	Adj66032	Aea54210	Abu50981	Aar67377	Adg65522	Aaw37775	Aay81823	Aau36152	Abu32326
AAM49648	ABU42650	ABU42523	ABU41210	AAU33952	ABU20285	ABU40327	ABU27583	ABU17114	ABU22153	AAR67376	AAW14497	ADJ66032	AEA54210	ABU50981	AAR67377	ADG65522	AAW37775	AAY81823	AAU36152	ABU32326
S	ø	9	9	4	9	9	9	9	9	N	7	œ	0	Ŋ	7	œ	~	٣	4	9
224	811	207	779	226	207	209	261	207	228	209	1216	840	840	191	270	837	100	100	100	100
47.4	42.5	42.1	41.7	41.4	40.4	39.8	39.8	39.8	38.6	38.1	37.6	37.2	37.2	37.0	36.4	31.2	23.8	23.8	23.8	23.8
559.5	502.5	497.5	493	489.5	477	470.5	470	469.5	455.5	449.5	443.5	439.5	439.5	437	429.5	368.5	281.5	281.5	281.5	281.5
	เก	7	80	29	0		7	٣	4	'n	36	7	œ	39	0	41	2	m	4	Ŋ

ALIGNMENTS

```
The present invention relates to a novel Helicobacter felis urease X and Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis in Helicobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an urease X subunit polypeptide of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                    Novel Helicobacter felis urease X and Y subunit polypeptides, useful in the diagnosis of Helicobacter felis infections and in the preparation of
                                                                                                                                   immunogenic fragment; antibacterial; Vaccine; Helicobacter felis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim 8; SEQ ID NO 2; 76pp; English
              ADJ58238 standard; protein; 226 AA
                                                                                                        Urease subunit polypeptide X.
                                                                                                                                                                                                                                                                 11-JUL-2001; 2001EP-00202666.
                                                                                                                                                                                                                                                                                              17-JUL-2000; 2000EP-00202565.
                                                                          (first entry)
                                                                                                                                                                                                                                                                                                                                                           Cattoli G;
                                                                                                                                                                                                                                                                                                                           (ALKU ) AKZO NOBEL NV
                                                                                                                                                                                                                                                                                                                                                                                          2002-124384/17.
                                                                                                                                                                       Helicobacter felis.
                                                                                                                                                                                                                                                                                                                                                                                                          N-PSDB; ADJ58237
                                                                                                                                                                                                  EP1176192-A2
                                                                                                                                                                                                                                                                                                                                                           Kusters JG,
                                                                          06-MAY-2004
                                                                                                                                                                                                                                  30-JAN-2002
                                             ADJ58238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       vaccines
ADJ58238
```

Sequence 226 AA;

H. felis Urease A Gerbil ur Murine ur

Helicobac Helicobac

Abu51893

Length 226; DB 5; 100.0%; Score 1181;

Query Match

```
CMHPLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE
                                                                  LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG
                                                                                          121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG
                                                                                                                 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGFIK
                                                                                                                                                                                                                                                                                           immunogenic fragment;
                                                                                                                                                                                                                                                                                                                                                                                                                                     (ALKU ) AKZO NOBEL NV
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Cattoli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 2002-124384/17.
                                                                                                                                                                                                                                              (first
                                                                                                                                                                                                                                                                     UreaseXY subunit #1
                                                                                                                                                                                                                                                                                                                  Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N-PSDB; ADJ58240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 226 AA;
                                                                                                                                                                                                                                                                                                                                           EP1176192-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Simi
nes 224;
                                                                                                                                                                                                                                               06-MAY-2004
                                                                                                                                                                                                                                                                                                                                                                  30-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Kusters JG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ٦
                                           61
                                                                    121
                                                                                                                  181
                                                                                                                                                                                                                        ADJ58241;
                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Loca
Matches
                                                                                                                                                                          RESULT 3
                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                      셤
                                                                                     g
                                                                                                                ò
                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The present invention relates to a novel Helicobacter felis urease X and Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis is Helicobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an ureaseXX subunit of the invention.
                       ö
                                                                                          CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                        CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                       LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                    LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                             9
                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Novel Helicobacter felis urease X and Y subunit polypeptides, useful in the diagnosis of Helicobacter felis infections and in the preparation of vaccines.
                                                          1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKINQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                           VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                       Gaps
                                                                                                                                                                                                                                                                                                                                                                 antibacterial; Vaccine; Helicobacter felis.
                       ;
ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 226;
                                                                                                                                                                                     QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGFIK 226
                     Indels
                                                                                                                                                                                                 QTRKVQLI PLGGSKKVI GMNGLVNN I ADERHKHKALDKAKSHGFIK
          Pred. No. 6.8e-116;
                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1.4e-115;
                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 1178;
Pred. No. 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Disclosure; SEQ ID NO 14; 76pp; English.
                                                                                                                                                                                                                                                                     ADJ58250 standard; protein; 226 AA
100.08; ±...
                                                                                                                                                                                                                                                                                                                                                                                                                                                            11-JUL-2001; 2001EP-00202666.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   17-JUL-2000; 2000EP-00202565.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99.7%;
                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity 99.6
nes 225; Conservative
                    Matches 226; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Cattoli G;
                                                                                                                                                                                                                                                                                                                                                                 immunogenic fragment;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (ALKU ) AKZO NOBEL NV.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2002-124384/17.
                                                                                                                                                                                                                                                                                                                                         UreaseXY subunit #7
                                                                                                                                                                                                                                                                                                                                                                                        Helicobacter felis
        Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N-PSDB; ADJ58249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 226 AA;
                                                                                                                                                                                                                                                                                                                    06-MAY-2004
                                                                                                                                                                                                                                                                                                                                                                                                              EP1176192-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Kusters JG,
                                                                                                                                                                                                                                                                                                                                                                                                                                     30-JAN-2002
                                                                                                                                       121
                                                                                                                                                             121
                                                                                                                                                                                     181
                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                            ADJ58250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Loca
Matches
                                                                                                                                                                                                                                                         ADJ58250
                                                                                                                                                                                                                                             RESULT
                                                                                                                                                                                                                                                                     g
                                                                                                                                                         q
                                                                                                                                                                                                          임
                                                                                       ò
                                                                                                                                     ò
                                                                                                                                                                                    8
```

```
ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The present invention relates to a novel Helicobacter felis urease X and Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis infections Helicobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Novel Helicobacter felis urease X and Y subunit polypeptides, useful in the diagnosis of Helicobacter felis infections and in the preparation of vaccines.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 VKLTPKEQEKFLLYYAGEVARKRRAEGLKLNQPEAIAYISAHIMDEARRGKKTVAELMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                              antibacterial; Vaccine; Helicobacter felis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 226;
QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGFIK 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           99.4%; Score 1174; DB 5; llarity 99.1%; Pred. No. 3.7e-115; Conservative 1; Mismatches 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Disclosure; SEQ ID NO 5; 76pp; English
                                                                                                                                                                                 Ä.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ureaseXY subunit of the invention.
                                                                                                                                                                                 ADJ58241 standard; protein; 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11-JUL-2001; 2001EP-00202666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    17-JUL-2000; 2000EP-00202565
                                                                                                                                                                                                                                                                                                            entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
```

ó

Gaps

..

Indels

ö

1; Mismatches

9 9

VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAELMEE

g,

ð

VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE

```
ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The present invention relates to a novel Helicobacter felis urease X and Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis infections Helicobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an ureaseXX subunit of the invention.
CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIBPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CMHFLKKDEVMPGVGNMVPDLGVGATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121 INAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Novel Helicobacter felis urease X and Y subunit polypeptides, useful in the diagnosis of Helicobacter felis infections and in the preparation of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAELMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                        antibacterial; Vaccine; Helicobacter felis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  226;
                                           226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGFIK 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALEKAKSHGFIK 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                           QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGFIK
                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 1174; DB 5;
Pred. No. 3.7e-115;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Disclosure; SEQ ID NO 11; 76pp; English.
                                                                                                                                           Ä
                                                                                                                                          ADJ58247 standard; protein; 226
                                                                                                                                                                                                                                                                                                                                                                     11-JUL-2001; 2001EP-00202666
                                                                                                                                                                                                                                                                                                                                                                                               17-JUL-2000; 2000EP-00202565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99.4%;
99.1%;
                                                                                                                                                                                                 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            224; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                           (ALKU ) AKZO NOBEL NV.
                                                                                                                                                                                                                                                         immunogenic fragment;
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Cattoli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 2002-124384/17.
                                                                                                                                                                                                                            UreaseXY subunit #5
                                                                                                                                                                                                                                                                                   Helicobacter felis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N-PSDB; ADJ58246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 226 AA;
                                                                                                                                                                                                                                                                                                              EP1176192-A2
                                                                                                                                                                                                 06-MAY-2004
                                                                                                                                                                                                                                                                                                                                          30-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Kusters JG,
                                                                                                                                                                     ADJ58247;
                 121
                                           181
                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        vaccines.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                               유
                                           ò
                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  유
```

```
The present invention relates to a novel Helicobacter felis urease X and Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis. Helicobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                Novel Helicobacter felis urease X and Y subunit polypeptides, useful in the diagnosis of Helicobacter felis infections and in the preparation of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKUNQPEAIAYISAHIMDEARRGKKTVAELMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CMHPLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWP1EPDEHFKAGEVKFGCDKD1E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                  antibacterial; Vaccine; Helicobacter felis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 226;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGFIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 1170; DB 5,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No. 9.8e
1; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Disclosure; SEQ ID NO 8; 76pp; English
                         ADJ58244 standard; protein; 226 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ADQ37849 standard; protein; 234 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ureaseXY subunit of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      99.1%;
98.7%;
                                                                                                                                                                                                                                              11-JUL-2001; 2001EP-00202666.
                                                                                                                                                                                                                                                                          17-JUL-2000; 2000EP-00202565.
                                                                               entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local Similarity 98.7
nes 223; Conservative
                                                                                                                                     immunogenic fragment;
                                                                                                                                                                                                                                                                                                     (ALKU ) AKZO NOBEL NV
                                                                                                                                                                                                                                                                                                                               Cattoli
                                                                                                                                                                                                                                                                                                                                                          WPI; 2002-124384/17.
                                                                               (first
                                                                                                         UreaseXY subunit #3
                                                                                                                                                              Helicobacter felis.
                                                                                                                                                                                                                                                                                                                                                                        N-PSDB; ADJ58243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 226 AA;
                                                                                                                                                                                                                    30-JAN-2002.
                                                                               06-MAY-2004
                                                                                                                                                                                                                                                                                                                               Kusters JG,
                                                    ADJ58244;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                              vaccines
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
RESULT 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADQ37849
            ADJ58244
                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
```

ö

180 GQTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF

ò

(first entry)

```
07-0CT-2004
                                          polypeptide.
           22-JUL-2004.
ADQ37849;
```

```
AAU35875
                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                The invention relates to an isolated nucleic acid molecule conferring on Helicobacter bizzozeronii an ability to produce urease, where the nucleic acid molecule is a urease gene cluster comprising at least one urease second molecule is a urease gene cluster comprising at least one urease accessory gene. The nucleic acid molecule is chosen from ureA, ureB, ureE, ureF, ureG, ureH and ureI. The invention also relates to an isolated protein encoded by the nucleic acid, a vaccine for preventing onset of disease in mammals infected by H. bizzozeronii comprising a nucleic acid and a carrier, and an isolated acid, its binding portion raised against the nucleic acid. The nucleic acids, proteins and antibodies are useful for vaccinating mammals against onset of disease caused by infection of H. bizzozeronii, which involves administering the sequences. The sequences are useful for detecting H. bizzozeronii in a sample of tissue or body fluids which involves providing a nucleotide sequence as a probe in a nucleic acid and detecting any reaction which indicates that H. bizzozeronii is present in the sample. This sequence represents the H. bizzozeronii ureA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120 TLNAGKQATTLEVHNKGDRPVQVGSHPHFFEVNKLLEFDREKAYGKRLDIASGTAVRFEP 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Novel isolated nucleic acid molecule having urease gene cluster, and conferring on Helicobacter bizzozeronii ability to produce urease, useful as vaccine for preventing disease in mammals infected by H.bizzozeronii.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKA-GEVKFGCDKDI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120 ELNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGA 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 GRILLKADDVMPGVAHMIHEVGIEANFPDGTXLVTIHTPVEDGGHKLAPGEVILK-NEDI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                       Urease, urease gene cluster; urease structural gene; urease accessory gene; ureA; Helicobacter bizzozeronii infection; antibacterial; enzyme.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              55.2%; Score 652; DB 8; Length 234; 57.3%; Pred. No. 5e-60; ive 39; Mismatches 55; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Claim 23; SEQ ID NO 3; 40pp; English.
H. bizzozeronii ureA polypeptide.
                                                                                                                                                                                                                                                                                                                                                                                                    Zhu J;
                                                                                                                                                                                                                                      12-AUG-2003; 2003US-00639273
                                                                                                                                                                                                                                                                             16-AUG-2002; 2002US-0404337P
                                                                                                                     Helicobacter bizzozeronii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Best Local Similarity 57.33
Matches 129, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                  Chang Y, Simpson KW,
                                                                                                                                                                                                                                                                                                                  (CHAN/) CHANG Y.
(SIMP/) SIMPSON K W.
                                                                                                                                                                                                                                                                                                                                                                                                                                       2004-533502/51.
                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI; 2004-533502/
N-PSDB; ADQ37848.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 234 AA;
                                                                                                                                                          US2004142343-A1,
                                                                                                                                                                                                                                                                                                                                                         (ZHUJ/) ZHU J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
```

```
prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonla typhi, Klebsiella pneumoniae, Beeudomonae aeruginosa and Enterococcus faccalis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense mucleic acids can also be used to identify proteins used in proliferation, to express these proteins, and to obtain antibodies capable of binding to the expressed proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in a wide variety of organisms. The present sequence represents an essential prokaryotic cellular proliferation protein. Note: The sequence data for this patent did not form part of the printed specification, but was obtained in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Carr GJ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          The invention relates to antisense inhibitors of genes essential to
                                                                                                                                                                                                                                                                                                                                                                                                                   prokaryotic cellular proliferation protein; antibiotic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 4; Length 238;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Trawick JD,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids.
                     224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62; Indels
                                                                                                                                                                                                                                                                                                                                                        Helicobacter pylori cellular proliferation protein #188
Wall D,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              51.9%; Score 613.5; DB 53.1%; Pred. No. 6e-56; tive 42; Mismatches 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Example 3; SEQ ID NO 11468; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ohlsen KL, Zyskind JW,
                                                                                                                                                                          AAU35875 standard; protein; 238 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2000US-0242578P.
2000US-0253625P.
2000US-0257931P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2000US-0191078P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           21-MAR-2001; 2001WO-US009180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2000US-0207727P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2001US-0269308P
                                                                                                                                                                                                                                                                                                                                                                                                                                                  antibacterial; drug design.
                                                                                                                                                                                                                                                                                             14-FEB-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (ELIT-) ELITRA PHARM INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best Local Similarity
Matches 119; Conservat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 2001-611495/70.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                N-PSDB; AAS53734.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 238 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WO200170955-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Haselbeck R,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      21-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27-NOV-2000;
22-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 16-FEB-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           26-MAY-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             23-OCT-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             27-SEP-2001
                                                                                                                                                                                                                                  AAU35875;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                     셤
```

1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE 60

g ઠે g ò g

```
Urease A (AAW07193) and B (AAW07194) subunits of Helicobacter pylori are encoded by the ureA + ureB gene locus of clinical isolate CPM630.
Vectors, e.g. pORV214 (see also AAT44351), carrying the gene locus can be used to transform host cells for the large-scale prodn. of recombinant, enzymatically inactive, multimeric urease. The urease complex induces a mucosal immune response that can treat or prevent Helicobacter, esp. H.
pylori, gastroduodenal infection. (Updated on 16-OCT-2003 to standardise
                   Vaccine for inducing mucosal response to Helicobacter - contg. multimeric urease complex and pref. an antibiotic, anti-secretory agent or bismuth
LNACKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GRITLIKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          51.7%; Score 610.5; DB 2; Length 238; 52.7%; Pred. No. 1.2e-55; ive 43; Mismatches 62; Indels 1;
                                                                                  224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Soman G,
Bhagat H,
                                                                                                         : : |:|| :|| :|| :|| || || EEKSVELIDIGGNRRIFGFNALVDRQADNESKKIALHRAKERGF
                                                                                  QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ackerman SK, Thomas WD, Ermak T, Guirakhoo F,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Disclosure; Page 70-71; 98pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                          Urease; ureA gene; ureB gene; vaccine
                                                                                                                                                                                                                                    Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Helicobacter pylori; strain CPM630.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ermak T,
                                                                                                                                                                                                                                  AAW07193 standard; protein; 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              96WO-US005800.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     95US-00431041
95US-00568122
                                                                                                                                                                                                                                                                                                                                                                              H. pylori urease A subunit.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Best Local Similarity 52.73
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Weltzin RA, Pappo J,
                                                                                                                                                                                                                                                                                                                  (revised)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 1996-497373/49.
                                                                                                                                                                                                                                                                                                                                          (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (ORAV-) ORAVAX INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Monath TP,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 238 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N-PSDB; AAT44351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WO9633732-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              25-APR-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     28-APR-1995;
06-DEC-1995;
                                                                                                                                                                                                                                                                                                                  16-OCT-2003
11-FEB-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     31-OCT-1996
    121
                                                                                                                                                                                                                                                                         AAW07193;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Lee CK,
                                                                                                                                                                                                                 AAW07193
                                                                                                                                                                                         RESULT
                                                                                                                                                                                                                                                        ద
                                                                                      à
                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    New nucleotide sequences encoding Campylobacter pylori-ureaseents - and derived vectors, transformants, protein, antibodies and probes, useful in diagnosis, treatment and prevention of infections.
                                                                                          GRILLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                            The protein can be used for the prodn. of antibodies and to prepare vaccines for the prevention /treatment of C. pylori infections. See also AARA578-81. (Updated on 25-MAR-2003 to correct PA field.) (Updated on 27-ANG-2003 to correct OS field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                  121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 238;
                                                                                                                                                                                                                                                            QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 610.5; DB 2
Pred. No. 1.2e-55;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      43; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (INSP ) INST PASTEUR.
(INRM ) INSERM INST NAT SANTE & RECH MED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Part of protein with urease activity.
                                                                                                                                                                                                                                                                                                                                                                                     ₹
                                                                                                                                                                                                                                                                                                                                                                                 AAR04579 standard; protein; 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Claim 11; Page 34; 47pp; French.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             51.7%;
52.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                88FR-00013135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           88FR-00013135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (revised)
(revised)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Helicobacter pylori.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1990-147844/19.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             N-PSDB; AAQ04328.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 238 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Urease; probe.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                27-AUG-2003
25-MAR-2003
21-SEP-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           06-OCT-1988;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                06-OCT-1988;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WO9004030-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         19-APR-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Labigne A;
                                                                                                                                                                                                                                                                                                                                                                                                                            AAR04579;
                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                        ARESULT 8

AAR04579

AAR04579

AAR0

XX

DT 27-A

DT 25-M

DT 27-B

DT 21-S

XX

XX

MO90

ENT 20-S

XX

MO90

ENT 20-S

XX

MO90

ENT 20-S

XX

MO90

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 20-S

ENT 2
                         g
                                                              ò
                                                                                                   g
                                                                                                                                     õ
                                                                                                                                                                                   셤
                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
```

Kleanthous H;

```
The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella pneumoniae, Bseudomonas aeruginosa and Enterococcus faccalis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to identify proteins used in proliferation, to express these proteins, and to obtain antibodies capable of binding to the expressed proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        antigense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in a wide variety of organisms. The present sequence represents an essential prokaryotic cellular proliferation protein. Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from WIPO at ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Carr GJ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Antisense; prokaryotic cellular proliferation protein; antibiotic; antibacterial; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    귱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ohlsen KL, Zyskind JW, Wall D, Trawick JD,
Xu HH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids.
                                  EEKSVELIDIGGNRRIFGFNALVDRQADNESKKIALHRAKERGF 223
                                                                                                                                                                                                                                                                                                                                                                                                                                         Helicobacter pylori cellular proliferation protein #6.
   OTRKVOLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Example 3; SEQ ID NO 11286; 511pp; English.
                                                                                                                                                                                                                                         AAU35693 standard; protein; 238 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2000US-0206848P.
2000US-0207727P.
2000US-0242578P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2000US-0253625P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2000US-0257931P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         16-FEB-2001; 2001US-0269308P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21-MAR-2001; 2001WO-US009180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2000US-0191078P
                                                                                                                                                                                                                                                                                                                                                                       14-FEB-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (ELIT-) ELITRA PHARM INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 2001-611495/70.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N-PSDB; AAS53552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO200170955-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Haselbeck R,
Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   27-NOV-2000;
22-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     23-MAY-2000;
26-MAY-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       23-OCT-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      21-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 27-SEP-2001
                                                              180
                                                                                                                                                                                                                                                                                                    AAU35693;
   181
                                                                                                                                                                                               AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

AAU3 5693

                                                a
ò
```

```
This invention describes a novel method for the preparation of a vaccine based on T cell-stimulating peptide sequences. The method comprises (1) identifying potential Mic (major histocompatibility complex). -binding and T cell-reactive epitopes in a target protein; (2) eliminating cross-reactive epitopes, and (3) verifying remaining epitopes by determining their activity in vitro and/or in vivo. The products of the invention have antibacterial, antiulcer, antinflammatory, cytostatic, virucide, protozoacide and immunosuppressive activity. The vaccine is especially used to protect against infection by Helicobacter pylori, but more generally can be prepared from proteins from any pathogen (virus, bacterium, protozoan) or tumour, or associated with autoimmune disease. Synthetic epitopes that are more immunogenic than natural sequences can be identified, and the vaccine may have increased immunogenicity (when formulated with adjuvant) or immunotolerance (formulated without an adjuvant). This sequence represents the urease A protein PA4 described in
                                                                                               61 GRTLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                        Urease A; vaccine; T cell-stimulating peptide; antibacterial; antiulcer; MHC; major histocompatibility complex; epitope; antiinflammatory; cytostatic; virucide; protozoacide; immunosuppressive; pathogen; tumour; autoimmune disease; Helicobacter pylori infection.
Preparing vaccine containing T cell-stimulating peptides, useful particularly for protection against Helicobacter pylori, by selecting epitopes from target proteins.
                                                                            61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE
                                                                                                                                                 121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG
                                                                                                                                                                                                                                                              223
                                                                                                                                                                                                                         181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                              (PLAC ) MAX PLANCK GES FOERDERUNG WISSENSCHAFTEN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Meyer TF;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Lucas B,
                                                                                                                                                                                                                                                                                                                                                       AAM49644 standard; protein; 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           German.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             04-JUL-2001; 2001WO-EP007656
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  05-JUL-2000; 2000DE-01032538.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Example 1; Fig 3; 36pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bumann D,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Urease A protein PA4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 2002-164497/21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 238 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WO20020141-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Aebischer A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                              17-MAY-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         10-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                            AAM49644;
                                                                                                                                                                                                                                                                                                                     RESULT 11
                                                                                                                                                                                                                                                                                                                                        AAM49644
                                                                                                                                                                                                                                                                                                                                                                         d
                                    ď
                                                                                                       셤
                                                                                                                                                                                   d
                                                                            ð
                                                                                                                                                   ò
```

ij

Gaps

ij

51.7%; Score 610.5; DB 4; Length 238; 52.7%; Pred. No. 1.2e-55; ive 43; Mismatches 62; Indels 1;

Best Local Similarity 52.7 Matches 118, Conservative

Query Match

```
The invention relates to inducing an immune response against Helicobacter in a mammal, comprising mucosally administering to the mammal an attenuated Salmonella vector containing a nucleic acid molecule encoding a Helicobacter antigen, and parenterally administering to the mammal a Helicobacter antigen. Also included is an attenuated Salmonella vector comprising a nucleic acid molecule encoding a Helicobacter antigen is a urease, a urease subunit, or its immunosenic fragment (encoded by the ureA and ureB genes). The mammal is at risk of having but does not have Helicobacter infection or has a Helicobacter infection. The attenuated Salmonella vector further comprises an htrA or nirB promoter. The vector can be used in inducing an immune response against Helicobacter in a mammal. The vector can be used to treat Helicobacter infection. The vector and the method can be used to treat
                                                                                                                                                    GRTLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                     61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                  LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     for
                                                                                   1 MKLTPKELDKLMLHYAGELAKKRKEKGIKLNYVEAVALISAHIMEEARAGKKTAAELMOE
                                                                  1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     mammals, useful
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 pHUR3; vaccine; helicobacter pylori infection; urease; immune stimulation; antibacterial; Immunostimulant; antiulcer; cytostatic; antiinflammatory; gastrointestinal-gen.; gastritis;
                                   ä
Length 238;
                                                                                                                                                                                                                                                                 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                       an immune response against Helicobacter in ma
Helicobacter induced gastroduodenal diseases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Hylicobacter pylori Urase A protein fragment SEQ ID
 DB 5;
                                  62:
                 .2e-55;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ä
 51.7%; Score 610.5; 52.7%; Pred. No. 1.2e
                                  43; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Freeman
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Disclosure; SEQ ID NO 4; 63pp; English.
                                                                                                                                                                                                                                                                                                                                                                                 AEB55115 standard; protein; 245 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Kleanthous H, Londono-Arcila P,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-NOV-2000; 2000WO-US030191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    99US-00431705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    N-PSDB; AEB55112, AEB55130.
                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ulcer; carcinoma.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Helicobacter pylori.
Salmonella typhimurium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 2001-343379/36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (ORAV-) ORAVAX INC
                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO200132014-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-NOV-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    22-SEP-2005
                  Best Local Simi
Matches 118;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     10-MAY-2001
                                                                                                                                                                 61
                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Inducing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       treating
   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      peptic
                                                                                                                                                                                                                                                                                                                                                   RESULT 12
                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                             셤
                                                                                                                               ò
                                                                                                                                                              셤
                                                                                                                                                                                                ò
                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                              g
```

Helicobacter induced gastroduodenal diseases, including acute, chronic or

```
atrophic gastritis, peptic ulcer diseases (e.g. gastric or duodenal ulcers), and gastric carcinoma. Attenuated Salmonella vector pHUR3 was constructed expressing UreA and UreB and including an E. coli AmpR gener breasent sequence represents a protein or peptide encoded by the pHUR3 plasmid. NOTE: pHUR3 is represented by both ABB5512 and ABB55130, the peptides expressed by pHUR3 are shown in the sequence listing to be split between ABB5512 and ABB55130, yet Figure 4 shows all the peptides being expressed by the one sequence, therefore all encoded peptides are cross-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       The invention relates to a protein having a specific region of primary structure of the beta-subunit Helicobacter pylori urease, appearing as ADS09176 (amino acids 201-318 of the beta subunit) or a sequence which generates antibodies that suppresses proliferation of H. pylori and which suppresses urease activity of H. pylori by an immune reaction. Also
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Protein having specific region of beta-subunit urease of Helicobacter pylori, which generates antibodies that suppress proliferation and urease activity of bacteria, useful for preventing Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                          180
                                                                                                                                                                                                                                                                                                                                                                                                                             CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                        67
                                                                                                                                                                                                                                                                                          LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG
                                                                                                                                                                                                                                                                        1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Urease, alpha subunit, UreB, gastric ulcer, peptic ulcer, gastritis, stomach cancer, vaccine, antibody, immune reaction.
                                                                                                                                                                                                                                         1;
                                                                                                                                                                                                        Length 245;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OTRKVOLI PLGGSKKVI GMNGLVNNI ADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                        4,
                                                                                                                                                                                                                                         62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DOKURITSU GYOSEI HOJIN KAGAKU GIJUTSU SH.
FUKUYAMA RINSHO KENSA CENT KK.
                                                                                                                                                                                                       ; Score 610.5; DB 4; Pred. No. 1.3e-55; 43; Mismatches 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Disclosure; SEQ ID NO 3; 26pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               H. pylori urease alpha beta subunit.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ADS09178 standard; protein; 238
                                                                                                                                        referenced to both sequences.
                                                                                                                                                                                                        51.7%;
52.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       28-FEB-2003; 2003JP-00054654.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      28-FEB-2003; 2003JP-00054654.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                     Query Match
Best Local Similarity 52.7
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Helicobacter pylori.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 2004-665475/65
                                                                                                                                                                       Sequence 245 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     JP2004261080-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  16-DEC-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      24-SEP-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            infection
                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ADS09178;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (FUKU-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADS09178
      88888888888888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                      원
                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
```

us-09-904-994b-2.rag

H. pylori comprising the urease fragment, a transformed cell transformed and transformed and transformed and transformed and transformed and transformed and transformed and transformed and transformed and transformed as plant by introducing the gene into the plant and making it express. The urease fragment is useful for producing blood serum containing antibodies which suppresses proliferation of H. pylori and which suppresses urease activity of H. pylori which involves immunising a living organism (e.g. a human, cow or milk or hen eggs from transgenic animals expressing the fragment. H. pylori is thought to be a cause of gastric and peptic ulcers, gastritis and may be implicated in stomach cancer. The urease enzyme is thought to be responsible for maintaining the bacterium in the acid conditions of the stomach. The included are a gene which encodes the urease fragment, a vaccine against present sequence is the H. pylori urease alpha subunit

Sequence 238 AA;

CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120 GRILLKPDDVMDGVASMIHEVGIBAMFPDGTKLVTVHTFIBANGKLVPGEL-FLKNEDIT 119 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180 9 9 1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE Gaps ï 51.4%; Score 607.5; DB 8; Length 238; 52.2%; Pred. No. 2.6e-55; tive 44; Mismatches 62; Indels 1 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224 Matches 117; Conservative Local Similarity 61 121 120 181 180 Н Query Match ద g a ò g Š ò ò

Helicobacter pylori urease alpha subunit protein SeqID 2. ADM28643 standard; protein; 238 ADM28643; RESULT 14 ADM28643

Ş

20-MAY-2004 (first entry)

immunogenic; urease; vaccine; passive immunisation; diagnostic; antibacterial; antibody

Helicobacter pylori

12-FEB-2004

11-JUL-2002; 2002JP-00203221

11-JUL-2002; 2002JP-00203221

(KAGA-) KAGAKU GIJUTSU SHINKO JIGYODAN

WPI; 2004-162021/16.

New peptide useful as a vaccine against Helicobacter pylori induces an antibody response against the bacterial urease.

Disclosure; SEQ ID NO 2; 19pp; Japanese.

This invention relates to a novel immunogenic peptide that induces production of antibodies against the Helicobacter pylori (H. pylori) urease protein. Specifically, it refers to a peptide antigen capable of

```
The sequence of the Helicobacter felis urease ureA gene product (given in AAR6731) was compared to ureases of Helicobacter pylori (AAR67375), Proteus mirabilis (AAR67376) and jack bean urease (AAR67377) and regions of homology were identified. (Updated on 25-MAR-2003 to correct PN field.)
                                                                                                                                                                                                                                                                                                           61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                             61 GRILLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTFIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                           121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                         120 INEGKKAVSVKVPPVGDRPVQIGSHFHFFEVNRCLDFDREKTFGKRLDIASGTAVRFEPG 179
        vaccine against H. pylori. The present invention describes generating monoclonal antibodies against the urease using hybridoma techniques that are useful for passive immunisation and diagnostic techniques. Furthermore, the antibacterial peptide can be used to immunise an animal in order to produce antibodies that are present within a functional food such as milk or eggs. This polypeptide sequence is the H. pylori urease alpha subunit protein of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DNA from Helicobacter pylori and Helicobacter felis - used to develop prods. for detection, treatment and prevention of Helicobacter infection.
                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                               Jrease; ureA gene; immunogen; vaccine; diagnostic; Helicobacter felis.
                                                                                                                                                                                                                                            1 VKLIPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
inducing an antibody response, such that it can be used to develop a
                                                                                                                                                                                                            ٠,
۲
                                                                                                                                                                            Length 238;
                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                            QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF
                                                                                                                                                                                                              63;
                                                                                                                                                                               DB 8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Thiberge J;
                                                                                                                                                                            51.1%; Score 603.5; DB 8 52.2%; Pred. No. 6.8e-55; ive 43; Mismatches 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Disclosure; Fig 4i-iii; 168pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (INSP ) INST PASTEUR.
(INRM ) INST NAT SANTE & RECH MEDICALE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ferrero R,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAR67375 standard; protein; 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         94WO-EP001625.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       93EP-00401309
93WO-EP003259
                                                                                                                                                                                             Best_Local Similarity 52.2%
Matches 117; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (revised)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Suerbaum S,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          H. pylori ureA urease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 1995-006797/01.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Proteus mirabilis.
                                                                                                                                               Sequence 238 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WO9426901-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         19-MAY-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       19-MAY-1993;
19-NOV-1993;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         25-MAR-2003
22-JUN-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          24-NOV-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Labigne A,
                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAR67375;
                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAR67375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          88888888888888
                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
```

```
XX
```

	238;	-
	51.0%; Score 602.5; DB 2; Length 238; 52.2%; Pred. No. 8.7e-55:	Tadala
	DB 2; e-55;	
	602.5; No. 8.7	matchee
	Score Pred.	3. Mio
		4140
238 AA;	Query Match Best Local Similarity	Marchee 117. Conservative 43. Mismatches 63. Indels 1
SQ Sequence 238 AA;	Query Match Best Local S	choa 117
Š	Que	×

1;	0 0	
Gaps	OLMBE : :	
1;	GKKTVZ 	
Indels	AHIMDEARRO	
63;	IAYIS :	
Mismatches	RKAEGLKLNOPEZ : : :\:	
43;	EVARK	
tches 117; Conservative 43; Mismatches 63; Indels 1; Gaps	1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEALAYISAHIMDEARRGKKTVAQLMEE 60 :	
117;	4 - 4	
tches		

ઠે

8 6 8 6 8 6 8

Search completed: November 28, 2005, 08:14:34 Job time : 76.7204 secs

```
US-09-904-994B-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-904-994B-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-904-994B-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 36, Appl
Sequence 154, Appl
Sequence 154, Appl
Sequence 37, Appl
Sequence 70574, A
Sequence 69134, A
Sequence 69134, A
Sequence 6826, A
Sequence 6826, A
Sequence 6826, A
Sequence 55507, A
Sequence 55507, A
Sequence 55507, A
Sequence 55507, A
Sequence 55507, A
Sequence 55507, A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 2, Appli
Sequence 14, Appl
Sequence 5, Appli
Sequence 11, Appl
Sequence 3, Appli
Sequence 34, Appli
Sequence 1468, A
Sequence 629, Appli
Sequence 629, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7, Appli
1, Appli
1, Appli
                                                                                                             November 28, 2005, 08:11:38; Search time 63.7582 Seconds (without alignments) 1481.056 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                    1181
1 VKLTPKEQEKFLLYYAGEVA.....ADERHKHKALDKAKSHGFIK 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 1
Sequence 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1: /cgn2_6/ptodata/1/pubpaa/US07_PUBCOMB.pep:*
2: /cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep:*
3: /cgn2_6/ptodata/1/pubpaa/US09_PUBCOMB.pep:*
4: /cgn2_6/ptodata/1/pubpaa/US108_PUBCOMB.pep:*
5: /cgn2_6/ptodata/1/pubpaa/US108_PUBCOMB.pep:*
6: /cgn2_6/ptodata/1/pubpaa/US108_PUBCOMB.pep:*
GenCore version 5.1.6
(c) 1993 - 2005 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-904-994B-2

US-09-904-994B-14

US-09-904-994B-14

US-09-904-994B-8

US-10-639-273-3

US-10-639-273-3

US-10-639-273-34

US-10-639-273-34

US-10-335-977-8629

US-10-639-273-36

US-10-639-273-36

US-10-639-273-36

US-10-639-273-37

US-10-282-122A-70574

US-10-282-122A-69134

US-10-282-122A-69134

US-10-282-122A-68259

US-10-282-122A-68259

US-10-282-122A-68259

US-10-282-122A-68259

US-10-282-122A-68259

US-10-282-122A-6938

US-10-282-122A-6938

US-10-282-122A-6938

US-10-282-122A-6938

US-10-282-122A-6938

US-10-282-122A-6938
                                                                                                                                                                                                                                                                                                                                                                               Potal number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Published Applications AA Main:*
                                                                                                                                                                                                                                                                                                                                        1867569 segs, 417829326 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-11-046-271-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Listing first 45 summaries
                                                                              protein search, using sw model
                                                                                                                                                                                                                                                                                BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Post-processing: Minimum Match 0% Maximum Match 100%
                                                                                                                                                                                                                                                                                                                                                                                                                       seq length: 0
seq length: 200000000
                                                                                                                                                                                                  US-09-904-994B-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query
Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Title:
Perfect score:
                                                                                                                                                                                                                                                                                Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1181
1174
1174
1170
652
652
613.5
613.5
613.5
613.5
613.5
613.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
643.5
64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score
                                                                              OM protein -
                                                                                                                                                                                                                                                                                                                                                                                                                         Minimum DB
Maximum DB
                                                                                                                                                                                                                                             Sequence:
                                                                                                                                                                                                                                                                                                                                            Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Database
                                                                                                                     Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š.
```

```
ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 111745, A
14633, A
460233, A
62539, A
62539, A
56845, A
111047, A
69391, A
4442, A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                    2, Appli
201340,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 VKLTPKEQEKFLLYYAGEVARKRKABGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121 INAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VKL TPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                           Sequence
Sequence
Sequence
                                                                                                                                  Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                   Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                    Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 226;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGFIK 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-10-437-963-124057
US-10-335-977-8627
US-10-424-599-254635
US-10-425-115-201340
US-10-425-115-201340
US-10-425-115-201340
US-10-282-122A-60250
US-10-282-122A-69772
US-10-282-122A-64516
US-10-282-122A-64616
US-10-282-122A-64616
US-10-282-122A-64616
US-10-282-122A-64616
US-10-282-122A-64616
US-10-282-122A-64616
US-10-282-122A-64616
US-10-282-122A-64616
US-10-282-122A-56846
US-10-282-122A-56846
US-10-282-122A-56846
US-10-282-122A-56846
US-10-282-122A-56846
US-10-282-122A-56846
US-10-282-122A-56846
US-10-282-122A-56846
US-10-282-122A-56846
US-10-282-122A-56846
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100.0%; Score 1181; DB 3;
100.0%; Pred. No. 3.4e-114;
iive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; Sequence 14, Application US/09904994B
; Publication No. US20040005325A1
; GENERAL INFORMATION:
; APPLICANT: AKZO No. US20040005325A1e1 N.V.
; TITLE OF INVENTION: Helicobacter vaccine
; FILE REFERENCE: Degoedesequenties
; CURRENT APPLICATION UNDER: US/09/904,994B
; CURRENT FILING DATE: 2001-07-13
; NUMBER OF SEQ ID NOS: 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE OF INVENTION: US20040005325A1e1 N.V.
TITLE OF INVENTION: Helicobacter vaccine
FILE REFERENCE: Degocdseequenties
CURRENT APPLICATION NUMBER: US/09/904,994B
CURRENT FILING DATE: 2001-07-13
NUMBER OF SEQ ID NOS: 21
SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 2
LENGTH: 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; Sequence 2, Application US/09904994B
; Publication No. US20040005325Al
; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: PRT
ORGANISM: Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity 100.
Matches 226; Conservative
        426
344.5
344.5
344.5
344.5
368.5
291.5
281.5
281.5
281.5
274.5
274.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
277.5
27
```

```
61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                             ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                               CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                            LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                          121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9
                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                      61 CMHFLXKXDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAELMEE
                                                                                                                                                                                                   1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAELMEE
                                                                                                                                                                               1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNOPEAIAYISAHIMDEARRGKKTVAOLMEE
                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                   ö
                                                                                                               Score 1178; DB 3; Length 226;
Pred. No. 7.1e-114;
1; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 226;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGFIK 226
                                                                                                                                                                                                                                                                                                                                                                           QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGFIK 226
                                                                                                                                                                                                                                                                                                                                                                                            OTRKVOLIPLGGSKKVIGMNGLVNNIADBRHKHKALDKAKSHGFIK 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                tch 99.4%; Score 1174; DB 3; al Similarity 99.1%; Pred. No. 1.8e-113; 224; Conservative 1; Mismatches 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 5, Application US/09904994B
Publication No. US20040005325A1
GENERAL INFORMATION:
TITLE OF INVENTION: Helicobacter vaccine
FILE REPERENCE: Degoodsequenties
CURRENT APPLICATION WHEER: US/09/904,994B
CURRENT FILING DATE: 2001-07-13
NUMBER OF SEQ ID NOS: 21
SEQ ID NO 5
                                                                                                                Query Match
Best Local Similarity 99.6%;
Matches 225; Conservative
                                                                ; ORGANISM: Helicobacter felis
US-09-904-994B-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM: Helicobacter felis
SOFTWARE: Patentin Ver.
SEQ ID NO 14
LENGTH: 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity
Matches 224; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 4
US-09-904-994B-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-904-994B-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-904-994B-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LENGTH: 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: PRT
                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                   TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                          g
                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                     원
                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        원
```

Sequence 11, Application US/09904994B
Publication No. US20040005325A1
GENERAL INFORMATION:
APPLICANT: AKZO No. US20040005325A1e1 N.V.

```
ö
                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        INVGKEVTELEVTNEGPKSLHVGSHFHFFETNKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                        1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAELMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61 CMHFLKKDEVMPGVGNMVPDLGVEATPPDGTKLVTVNMPIEPDEHFKAGEVKFGCDKDIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKL,VTVNWP1EPDEHFKAGEVKFGCDKD1E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 VKLIPKEQEKFLLYYAGEVARKRKAEGLKINQPEAIAYISAHIMDEARRGKKTVAQIMEE
                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                              Score 1174; DB 3; Length 226;
Pred. No. 1.8e-113;
2; Mismatches 0; Indels (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99.1%; Score 1170; DB 3; Length 226; 98.7%; Pred. No. 4.8e-113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGFIK 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALEKAKSHGFIK 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGFIK 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 8, Application US/09904994B; Publication No. US20040005325A1; GENERAL INFORMATION: APPLICANT: ARZO No. US20040005325A1e1 N.V. TITLE OF INVENTION: Helicobacter vaccine; FILE REFERENCE: Degoedesequenties; CURRENT APPLICATION NUMBER: US/09/904,994B; CURRENT FILING DATE: 2001-07-13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1; Mismatches
TITLE OF INVENTION: Helicobacter vaccine FILE REFERENCE: Degedesequenties CURRENT APPLICATION NUMBER: US/09/904, 994B CURRENT FILING DATE: 2001-07-13 NUMBER OF SEQ ID NOS: 21 SOFTWARE: PATENTIN Ver. 2.1 ENGTH: 226
                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity 99.1%;
Matches 224; Conservative
                                                                                                                                                                                     TYPE: PRT ORGANISM: Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORGANISM: Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 8
LENGTH: 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Local Similarity 98.7
Matches 223, Conservative
                                                                                                                                                                                                                                     US-09-904-994B-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-904-994B-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-904-994B-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
```

```
61 GRTLLKADDVMPGVAHMIHEVGIEAGFPDGTKLVTIHTPVEAGSDKLAPGEVILK-NEDI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 GRILLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEP-DEHFKAGEVKFGCDKDI 119
                                                                                                                             ELNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGA 179
                                                                                                                                                                 1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 238;
                                                                                                                                                                                                                                                           180 GQTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                               |::|:||:||:||:||:||GEEKTVELIDIGGNKRIYGFNALVDRQADHDGKKLALKRAKEKHF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Wall, Daniel
APPLICANT: Trawick, John D.
APPLICANT: Trawick, Grant J.
APPLICANT: Yanamoto, Robert T.
APPLICANT: Yanamoto, Robert T.
APPLICANT: Yanamoto, Robert T.
APPLICANT: Will H. Howard
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRAN. 013-21
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT APPLICATION NUMBER: 60/191,078
PRIOR FILLING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILLING DATE: 2000-05-23
PRIOR PRILING DATE: 2000-05-26
PRIOR FILLING DATE: 2000-10-23
PRIOR FILLING DATE: 2000-10-23
PRIOR FILLING DATE: 2000-10-23
PRIOR FILLING DATE: 2000-11-27
PRIOR FILLING DATE: 2000-11-27
PRIOR FILLING DATE: 2000-11-27
PRIOR FILLING DATE: 2000-11-27
PRIOR FILLING DATE: 2000-12-26
PRIOR FILLING DATE: 2000-12-26
PRIOR FILLING DATE: 2000-10-23
PRIOR FILLING DATE: 2000-10-216
PRIOR FILLING DATE: 2000-10-216
PRIOR FILLING DATE: 2001-02-16
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-02-16
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 2001-10-216
PRIOR FILLING DATE: 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; Score 613.5; DB 3;
; Pred. No. 4.1e-55;
42; Mismatches 62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 11468, Application US/09815242 Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity 53.1%;
Matches 119; Conservative 4:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORGANISM: Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Haselbeck, Robert
APPLICANT: Oblsen, Kari L.
APPLICANT: Zyskind, Judith W.
APPLICANT: Wall, Daniel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-815-242-11468
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
APPLICANT:
APPLICANT:
         61
                                                                                                                                                                                                                                                                                                                             180
                                                        음
                                                                                                                                    ð
                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKA-GEVKFGCDKDI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120 ELNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGA 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120 TLNAGKQATTLEVHNKGDRPVQVGSHFHFFEVNKLLEFDREKAYGKRLDIASGTAVRFEP 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                            APPLICANT: Chang, Yung-Fu
APPLICANT: Chang, Yung-Fu
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Zhu, Jiaqian
TITLE OF INVENTION: HELICOBACTER BIZZOZERONII UREASE GENES AND THEIR USES
TITLE OF INVENTION: HE DIAGNOSTIC AND TREATMENT METHODS
FILE REPERENCE: 19603/881 US/10/639,273
CURRENT APPLICATION NUMBER: US/10/639,273
CURRENT FILING DATE: 2003-08-12
PRIOR APPLICATION NUMBER: 60/404,337
PRIOR FILING DATE: 2002-08-16
NUMBER OF SEQ ID NOS: 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 34, Application US/10639273
Publication No. US20040142343A1
GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: Chang, Yung-Fu
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Zhu, Jiaqian
TITLE OF INVENTION: HELICOBACTER BIZZOZERONII UREASE GENES AND THEIR USES
TITLE OF INVENTION: IN DIAGNOSTIC AND TREATMENT METHODS
FILE REFERENCE: 19603/3881
CURRENT APPLICATION NUMBER: US/10/639,273
CURRENT FILING DATE: 2003-08-12
PRIOR FILING DATE: 2002-08-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNOPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 VKLIPPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ;
;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match 52.7%; Score 622; DB 4; Length 234; Best Local Similarity 54.7%; Pred. No. 5.2e-56; Matches 123; Conservative 41; Mismatches 59; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    55.2%; Score 652; DB 4; Length 234; 57.3%; Pred. No. 3.9e-59;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               180 GOTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      55; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   39; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: PRT ORGANISM: Helicobacter bizzozeronii
   Sequence 3, Application US/10639273
Publication No. US20040142343A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM: Helicobacter heilmannii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Local Similarity 57.38
Matches 129; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NUMBER OF SEQ ID NOS: 41
SOFTWARE: Patentin Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 7
US-10-639-273-34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-639-273-34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQ ID NO 34
LENGTH: 234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-639-273-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQ ID NO 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
```

g

ઠે

g

8

g ò d

ð

ઠ 요

```
SEQ ID NO 11286
LENGTH: 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-639-273-36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                120 INEGKKAVSVKVKNVGDRPVQIGSHFHFFEVNRCLDFDREKTFGKRLDIASGTAVRFEPG 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 GRTLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                          APPLICANT: DOUGLAS SMITH et al
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES
TITLE OF INVENTION: NUCLEIC ACID AND THERAPEUTICS
DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 238;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indela
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 51.9%; Score 613.5; DB 4; Best Local Similarity 53.1%; Pred. No. 4.1e-55; Matches 119; Conservative 42; Mismatches 62;
                                                                                                                                                                                                                                                                                                                                                         COMPUTER: IBM PC Compatible
OPERATING SYSTEM: Windows NT 4.0
SOFTWARE: UNIX
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/10/335,977
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME: Mandragouras, Amy E.
REGISTRATION NUMBER: 36,207
REFERENCE/DOCKET NUMBER: GTN-018
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617)227-7400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: 08/993,002
FILING DATE: 17-DEC-1997
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                       NUMBER OF SEQUENCES: 10031
CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD
STREET: 28 State Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM: Helicobacter pylori
                                                                                                                                                                                                                                                                                                   ZIP: 02109-1875
COMPUTER READABLE FORM:
MEDIUM TYPE: CD/ROM ISO9660
                Sequence 8629, Application US/10335977
Publication No. US20040052799A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LENGTH: 238 amino acids TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       INFORMATION FOR SEQ ID NO: 8629: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELEFAX: (617)742-4214
                                                                                                                                                                                                                                                               STATE: Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TOPOLOGY: linear
MOLECULE TYPE: protein
HYPOTHETICAL: YES
                                                                                                                                                                                                                                                                            COUNTRY: USA
ZIP: 02109-1875
                                                                                                                                                                                                                                        CITY: Boston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORIGINAL SOURCE:
US-10-335-977-8629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
```

```
61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61 GRTLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 36, Application US/10639273

Publication No. US20040142343A1

GENERAL INFORMATION:
APPLICANT: Chang, Yung-Fu

APPLICANT: Singson, Kenneth W

APPLICANT: Zhu, Jiaqian

TITLE OF INVENTION: HELTCOBACTER BIZZOZERONII UREASE GENES AND THEIR USES

TITLE OF INVENTION: IN DIAGNOSTIC AND TREATMENT METHODS

FILE REFERENCE: 19603/3881

CURRENT APPLICATION NUMBER: US/10/639,273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           51.7%; Score 610.5; DB 3; Length 238; 52.7%; Pred. No. 8.4e-55; ive 43; Mismatches 62; Indels 1;
                                                                                                                        APPLICANT: Obligation, Kari L.
APPLICANT: 2yskind, Judith W.
APPLICANT: 2yskind, Judith W.
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Dentification of Essential Genes in TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
FILE REPERENCE: ELITRA.011A
FILE REPERENCE: ELITRA.011A
FILE REPERENCE: 2001-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OTRKVOLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EEKSVELIDIGGNRRIFGFNALVDRQADNESKKIALHRAKERGF 223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-05-26
PRIOR PLILING DATE: 2000-10-23
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR APPLICATION NUMBER: 60/245,578
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR PRILING DATE: 2000-11-27
PRIOR PLILING DATE: 2000-11-27
PRIOR PLILING DATE: 2000-12-22
PRIOR PLILING DATE: 2000-12-22
PRIOR PILING DATE: 2000-12-22
PRIOR PLILING DATE: 2001-02-16
PRIOR PLILING DATE: 2001-02-16
PRIOR PLILING DATE: 2001-02-16
PRIOR PLILING DATE: 2001-02-16
PRIOR PLILING DATE: 2001-02-16
PRIOR PLILING DATE: 2001-02-16
PRIOR PLILING DATE: 2001-02-16
PRIOR PLILING DATE: 2011-02-16
PRIOR PLILING DATE: 2011-02-16
Sequence 11286, Application US/09815242 Batent No. USZ002061569A1 GENERAL INCRMATION APPLICANT: Haselbeck, Robert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; ORGANISM: Helicobacter pylori
US-09-815-242-11286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity 52.7%
Matches 118; Conservative
```

```
US-10-335-977-8628
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-012-819-154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-012-819-154
                                                                FEATURE
                                                                                                                                                                                                                                                                                                                                               62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Loca
Matches
                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                            유
                                                                                                                                                                                                                                                                                                                                                                                                           ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                   61 GRTLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                      61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                    121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                             1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                           ..
7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: DOUGLAS SMITH et al
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES
RELATING TO HELICOBACTER PYLORI FOR
DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                                                                     Query Match 50.3%; Score 594; DB 4; Length 237; Best Local Similarity 52.2%; Pred. No. 4.4e-53; Matches 117; Conservative 43; Mismatches 62; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180 EEKSVELIDIGGNRRIFGFNALVDRQADNESK-IALHRAKERGF 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/10/335,977
FILING DATE: 30-Dec-2002
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/993,002
FILING DATE: 17-DEC-1997
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME: Mandragouras, Amy E. REGISTRATION NUMBER: 36,207
REFERENCE/DOCKET NUMBER: GTN-018
TELECOMMUNICATION INFORMATION:
PRIOR APPLICATION NUMBER: 60/404,337
PRIOR FILING DATE: 2003-08-12
PRIOR FILING DATE: 2002-08-16
NUMBER OF SEQ ID NOS: 41
SEQ ID NO 36
TYPE: Patentin Ver. 2.1
TYPE: PRT
CORGANISM: Helicobacter pylori
US-10-639-273-36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD
STREET: 28 State Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ZIP: 02109-1875
COMPUTER READABLE FORM:
MEDIUM TYPE: CD/ROM ISO9660
COMPUTER: IBM PC Compatible
OPERATING SYSTEM: Windows NT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 8628, Application US/10335977
Publication No. US20040052799A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELEPHONE: (617)227-7400
TELEFAX: (617)742-4214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         INFORMATION FOR SEQ ID NO: 8628:
SEQUENCE CHARACTERISTICS:
LENGTH: 228 amino acida
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     10031
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CITY: Boston
STATE: Massachusetts
COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOFTWARE: UNIX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-335-977-8628
                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                          d
                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
```

```
Helicobacter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Legrain, Pierre
APPLICANT: Selig, Luc
APPLICANT: Selig, Luc
APPLICANT: Selig, Luc
APPLICANT: Selig, Luc
APPLICANT: Selig, Luc
APPLICANT: Rain, Jean-Christophe
TITLE OF INVENTION: Collection of Protein Interactions and Applications thereof
FILE REFREENCE: BS053
FILE REPRESTOR: S053
CURRENT APPLICATION NUMBER: US/10/012,819
PRIOR PILING DATE: 2001-10-30
PRIOR FILING DATE: 1999-04-30
NUMBER OF SEQ ID NOS: 278
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 154
LENGTH: 228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62 DGVASMIHEVGIBAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDITINEGKKAVSVK 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        72 PGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIELNAGKEVTELE 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   132 VTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAGQTRKVQLIPLG 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           72 PGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIELNAGKEVTELE 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VINEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAGQTRKVQLIPLG 191
                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                            2 HIHYAGELARKRKEKGIKLINYVEAVALISAHIMEEARAGKKTAAELMQEGRTLLKPDDVM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2 MLHYAGELAKKRKEKGIKLNYVEAVALISAHIMEEARAGKKTAAELMQEGRTLLKPDDVM
                                                                                                                                                                                                                                                                                                                                12 LLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEECMHFLKKDEVM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           12 LLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEECMHFLKKDEVM
                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                 .;
;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1;
                                                                                                                                                                                                                               Length 228;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 4; Length 228;
                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                             DB 4;
                                                                                                                                                                                                                                                                                 60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         90;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     48.6%; Score 573.5; DB 4 52.1%; Pred. No. 5.6e-51; ative 41; Mismatches 60
                                                                                                                                                                                                                             Query Match 48.8%; Score 576.5; DB 4 Best Local Similarity 52.6%; Pred. No. 2.7e-51; Matches 112; Conservative 40; Mismatches 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                192 GSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |:::: | | ||: || GRRIFGFNALVDRQADNESKKIALHRAKERGF 213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                  NAME/KEY: misc feature
LOCATION: (B) LŌCATION 1...228
SEQUENCE DESCRIPTION: SEQ ID NO: 8628:
HYPOTHETICAL: YES
ORIGINAL SOURCE:
ORGANISM: Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               . Sequence 154, Application US/10012819; Publication No. US20030017478A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         111; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
```

```
Sequence 35, Application US/10639273

Sequence 35, Application US/200401423431

Fublication No. US200401423431

SERBEAL INFORMATION:
APPLICANT: Chang, Yung-Fu

APPLICANT: Simpson, Kenneth W

APPLICANT: Simpson, Kenneth W

TITLE OF INVENTION: HELICOBACTER BIZZOZERONII UREASE GENES AND THEIR USES

TITLE OF INVENTION: UN DIAGNOSTIC AND TREATMENT METHODS

FILE REFERENCE: 19603/3881

CURRENT APPLICATION NUMBER: 60/404,337

PRIOR APPLICATION NUMBER: 60/404,337

PRIOR FILING DATE: 2002-08-16

NUMBER OF SEQ ID NOS: 41

SEQ ID NO 35

SEQ ID NO 35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 37, Application US/10639273
Publication No. US20040142343A1
GENERAL INFORMATION:
GENERAL INFORMATION:
GENERAL SIMPSON, Kenneth W
APPLICANT: Chang, Yung-Pu
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Show, Jiaqian
TITLE OF INVENTION: HELICOBACTER BIZZOZERONII UREASE GENES AND THEIR USES
TITLE OF INVENTION: IN DIAGNOSTIC AND TREATMENT METHODS
FILE REPERENCE: 19603/3881
CURRENT APPLICATION NUMBER: US/10/639,273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 237;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 225;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                : : |:|| :|| :|| || || || || EEKSVELIDIGGNKRIYGFNSLVDRQADADGKKLGLKRAKEKGF 223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 45.8%; Score 540.5; DB 4; Length Best Local Similarity 48.9%; Pred. No. 1.5e-47; Matches 110; Conservative 41; Mismatches 73; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     68; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 48.0%; Score 566.5; DB 4; Best Local Similarity 50.0%; Pred. No. 3.2e-50; Matches 112; Conservative 43; Mismatches 68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: 60/404,337
PRIOR FILING DATE: 2002-08-16
NUMBER OF SEQ ID NOS: 41
SOFTWARE: Patentin Ver: 2.1
LENGTH: 225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: PRT ORGANISM: Helicobacter hepaticus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: PRT
ORGANISM: Helicobacter felis
RESULT 14
US-10-639-273-35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 15
US-10-639-273-37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-639-273-37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-639-273-35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
```

1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKINQPEAIAYISAHIMDEARRGKKTVAQLMEE

1;

```
61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                      121 INAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                       181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGFI 225
                                                                                                                                                        completed: November 28, 2005, 08:24:30 e: 64.7582 secs
                                                            g
                                                                                 à
                                                                                                            g
                                                                                                                                         ò
                                        ò
```

us-09-904-994b-2.rapbn

```
RESULT 2
US-10-485-517-181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-793-626-116
                     63.5
63.5
62.5
62.5
62.5
61.5
61.5
                                                                                                                                                                                                                                                                                                   61
61
61
61
61
60.5
                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURE:
a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  108, App
50, Appl
1089, Ap
6, Appli
1248, Ap
1460, Ap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                244, App
3, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13, Appl
4, Appli
7, Appli
16, Appli
3188, Ap
3184, Ap
2594, Ap
462, App
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             51, Appl
2, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 116, App
Sequence 181, App
Sequence 2006, Ap
                                                                                                                                                                                        (without alignments)
240.659 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                              November 28, 2005, 08:14:48 ; Search time 2.84635 Seconds
                                                                                                                                                                                                                                                                                  1181
1 VKLTPKEQEKFLLYYAGEVA.....ADERHKHKALDKAKSHGFIK 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /cgn2_6/ptodata/1/pubpaa/US10_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/US06_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/US07_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/US09_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/US09_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/PCT_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/US11_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/US11_NEW_PUB.pep:*
                     GenCore version 5.1.6
Copyright (c) 1993 - 2005 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-793-626-116

US-10-485-517-181

US-10-513-626-2006

US-10-813-626-2006

US-10-821-734-1089

US-10-821-734-1089

US-10-793-626-1248

US-10-793-626-1248

US-10-793-626-1248

US-10-793-626-1248

US-10-793-626-134

US-11-013-759-13

US-11-013-759-7

US-11-013-759-7

US-11-013-759-7

US-11-013-759-7

US-11-013-759-7

US-11-013-759-7

US-10-793-626-3188

US-10-793-626-3188

US-10-793-626-3188

US-10-793-626-3188

US-10-793-626-3188

US-10-793-626-3188

US-10-793-626-3188

US-10-793-626-3188

US-10-793-626-3188

US-10-793-626-3188

US-10-793-626-3188

US-10-793-626-3188

US-10-793-626-3188

US-10-793-626-3188

US-10-793-626-3188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Published_Applications_AA_New:*
                                                                                                                                                                                                                                                                                                                                                                                                                             17545 segs, 3030971 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                  - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                               Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                          US-09-904-994B-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query
Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

1009

                                                                                                                                                                                                                                                                                                                                                         BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Scoring table:
                                                                                                                                                                                                                                                                                  Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score
                                                                                                                    OM protein
                                                                                                                                                                                                                                                                                                             Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                             Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Database
                                                                                                                                                                Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
```

```
ö
                                                                                                           Sequence 2, Applisequence 30, Applisequence 54, Applisequence 2, Applisequence 15, Applisequence 128, Applisequence 310, Applisequence 310, Applisequence 310, Applisequence 310, Applisequence 310, Applisequence 310, Applisequence 310, Applisequence 310, Applisequence 310, Applisequence 310, Applisequence 310, Applisequence 310, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 3174, Applisequence 31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 106, App
Sequence 272, App
Sequence 68, Appl
Sequence 962, App
Sequence 59, Appl
Sequence 17, Appl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           130 LEVINEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAGOTRKVOLIP 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 116, Application US/10793626
Publication No. US20050255478A1
GENERAL INFORMATION:
APPLICANT: KIMERELY, WILLIAM JOHN
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
FILE REFERENCE: PU3480US
CURRENT APPLICATION NUMBER: US/10/793,626
CURRENT FILING DATE: 1999-11-09
PRIOR APPLICATION NUMBER: 60/164,258
PRIOR FILING DATE: 1999-11-09
NUMBER OF SEQ ID NOS: 4472
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 116
LENGTH: 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
       Sequence 3
Sequence 2
Sequence 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OTHER INFORMATION: Description of Artificial Sequence: synthetic; OTHER INFORMATION: amino acid sequence US-10-793-626-116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match 20.9%; Score 247; DB 1; Length 111; Best Local Similarity 53.4%; Pred. No. 1.1e-17; Matches 47; Conservative 12; Mismatches 29; Indels
US-10-793-626-3250

US-10-793-626-2958

US-10-921-24-1262

US-10-921-934-1262

US-11-053-100-58

US-11-053-100-58

US-11-053-100-58

US-11-099-715-2

US-11-179-977-15-2

US-11-082-389-128

US-11-082-389-128

US-11-073-626-2174

US-10-793-626-2174

US-10-793-626-2174

US-10-793-626-2174

US-10-785-517-373

US-10-785-517-373

US-10-689-742-68

US-10-689-742-68

US-10-689-742-68

US-10-858-730-05-99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 181, Application US/10485517
Publication No. US20050256299A1
GENERAL INPORMATION:
APPLICANT: UNIVERSITY of Sheffield
APPLICANT: Biosynexus Incorporated
APPLICANT: Foster, Simon
TITLE OF INVENTION: Antigenic Polypeptides
TITLE REPERRING: P100629WO
CURRENT APPLICATION NUMBER: US/10/485,517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    190 LGGSKKVIGMNGLVNNIADERHKHKALD 217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62 YSGRRKIYGFRGLVDGDIDEERVFRPND 89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: PRT
ORGANISM: Artificial Sequence
```

```
JS-10-689-742-50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: PRT
                                                                                                                                                                                                                                                                                                                                             TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    129 IIDETGVKLDIEQD-----GTIFIGAVDQAMINRAKEIIE-DITREA-----EVGQVYH-- 176
                                                                                                                                                                                                                                                                                                                                                                                    138 KSLHVGSHFHFFFANKALKFDREKAYGKRLDIPSGNTLRIGAGQTRKVQLIPLGGSKKVI 197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          94 ----VIVNWPIEPDEHFKAGEVKFGCDKDIELNAGKEVTELEVTNEGPKSLHVGSHFHFF 149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EANKALKFDREKAYGKRLDI-PSGNTL----RIGAGQTRKVQ-LIPLGGSKKV---IGM 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          177 ----AKVKRIEKYGAFVELFPGKDALLHISQISQERINKVEDVLKIGDTIEVKITEIDK 231
                                                                                                                                                                                                                                                                                                                                                                                                                  44 MDEARRGK------KTVAQLMEECMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKL-- 93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 2006, Application US/10793626
Publication No. US20050255478A1
GENERAL INFORMATION:
APPLICANT: KIMMERLY, WILLIAM JOHN
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
CURRENT APPLICATION NUMBER: US/10/793,626
CURRENT FILING DATE: 1999-11-09
PRIOR FILING DATE: 1999-11-09
NUMBER OF SEQ ID NOS: 4472
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 2006

LEMBER OF SEQ ID NOS: 4472
SEQ ID NO 2006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           69; Indels 51; Gaps
                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     OTHER INFORMATION: Description of Artificial Sequence: synthetic; OTHER INFORMATION: amino acid sequence
US-10-793-626-2006
                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match 7.2%; Score 84.5; DB 1; Length 247; Best Local Similarity 23.8%; Pred. No. 0.14; Matches 48; Conservative 34; Mismatches 69; Indels 5
                                                                                                                                                                                                                                                                                           18.0%; Score 212; DB 1; Length 106; 46.9%; Pred. No. 2.4e-14; Live 15; Mismatches 28; Indels
CURRENT FILING DATE: 2004-02-02
PRIOR APPLICATION NUMBER: GB 0118825.9
PRIOR FILING DATE: 2001-08-02
PRIOR APPLICATION NUMBER: GB 0200349.9
PRIOR FILING DATE: 2002-01-09
NUMBER OF SEQ ID NOS: 424
SOPTWARR: PARENTIN VETSION 3.1
SEQ ID NO 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                232 QGRVN-----ASHKVLEQSKN 247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     200 NGLVNNIADERHKHKALDKAKS 221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 4
US-10-510-386-108
'S equence 108, Application US/10510386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        198 GMNGLVNNIADERHKHKALDK 218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | |:|| || GFRGMVNGPIDESRVYRPTDE 82
                                                                                                                                                                                                     ; TYPE: PRT
; ORGANISM: Staphylococcus aureus
US-10-485-517-181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: PRT
ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                         38; Conservative
                                                                                                                                                                                                                                                                                                                Best Local Similarity
Matches 38; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 3
US-10-793-626-2006
                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
```

```
APPLICANT: Jacobs, Kenneth
APPLICANT: McCoy, John M
APPLICANT: LaVallie, Edward R
APPLICANT: LaVallie, Edward R
APPLICANT: Evans, Cheryl
APPLICANT: Evans, Cheryl
APPLICANT: Freacy, Maurice
APPLICANT: Spaulding, Vikki
TITLE OF INVENTION: SECRETED PROTEINS AND POLYNUCLEOTIDES ENCODING THEM
FILE REFERENCE: 00766.00091.10
CURRENT APPLICATION NUMBER: US/10/689,742
CURRENT FILING DATE: 2003-10-22
PRIOR APPLICATION NUMBER: 09/746,783
PRIOR APPLICATION NUMBER: 09/746,783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     46 EARRGKKTVAQLMEECMHFLKKDEVMPGVGNMVPDLGVEATPPDGTKLVTVNWPIEPDEH 105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 95 QKEKDKQSLKKIQEQVNRPIKEKNLQKQVNTKLTDEGLLLS------IEDNIF 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    106 FKAGEVKFGCDKDIELNAGKEVTELEVTNEGPKSLHVGSHF-----HFFEANKAL--- 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         142 FDSGKAEIR-QQDIPL--AKEVSDLLVINP-PRNIVISGHTDNVPIRNSQFKSNWHLSVM 197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            186 LTP--NTPFLIDNDGNIENTEKLQYSGERLYKFTVTAYDC------GKKRAADDAEV 234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            --QLMEEC----MHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVN----WPIEPDEHF 106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3 LIPKEOEKFLLYYAGEVARKRAE--GLKLNOPEAIAYISAHIMDEARRGKKTVA----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         47; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        198 RAVNFMGLLIENPKLDAXIFSAKGYGEFKPIASNDT-EEGRRKORRVEILILPIG 251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels 89;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match 6.5%; Score 76.5; DB 1; Length 428; Best Local Similarity 21.7%; Pred. No. 1.8; Matches 55; Conservative 28; Mismatches 82; Indels 89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 6.6%; Score 77.5; DB 1; Length 259; Best Local Similarity 21.7%; Pred. No. 0.71; Matches 38; Conservative 36; Mismatches 54; Indels 4
                                                                                APPLICANT: Clausen, ID Groth
APPLICANT: Clausen, ID Groth
APPLICANT: Clausen, ID Groth
APPLICANT: Jorgensen, Steen Troels
APPLICANT: Rasmussen, Michael Dolberg
TITLE OR INVENTION: Improved Bacillus Host Cell
FILE REPERENCE: 10294.204-US
CURRENT APPLICATION NUMBER: US/10/510,386
CURRENT FILING DATE: 2004-10-04
NUMBER OF SEQ ID NOS: 248
SQOTWARE: Patentin version 3.3
SEQ ID NO 108
ILENGTH: 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 50, Application US/10689742
Publication No. US20050250180A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        , ORGANISM: Bacillus licheniformis US-10-510-386-108
Publication No. US20050244922A1
GENERAL INFORMATION:
APPLICANT: Andersen, Jens Tonne
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SOFTWARE: Patentin version 3.2
SEQ ID NO 50
LENGTH: 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQ ID NOS: 231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; ORGANISM: Homo sapiens
US-10-689-742-50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
```

ò g ò g ò 셤

```
; TYPE: PRT
; ORGANISM: Shewanella oneidensis
US-10-858-730-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-793-626-1248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                               Sequence 1089, Application US/10821234

Publication No. US20050555114A1

GENERAL INFORMATION:

APPLICANT: Labat, Interpretation Vision

APPLICANT: Stache-Crain, Birgit

APPLICANT: Andarmani, Susan

APPLICANT: Andarmani, Susan

TITLE OF INVENTION: Methods for Diagnosis and Treatment of Preeclampsia

TITLE OF INVENTION: Methods for Diagnosis and Treatment of Preeclampsia

CURRENT APPLICATION NUMBER: US/10/821,234

CURRENT FILING DATE: 2004-04-07

PRIOR FILING DATE: 2003-04-07

NUMBER OF SEQ ID NOS: 1704

SEQ ID NO 1089

SEQ ID NO 1089
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 290 DAQNPLSAGLQGACLMETVELLQAKVSALDLAVLDQVEARLQSVLGKVNBIA----KHKA 345
                                                                  -----KVIGMNGLVNNIADERHKHKA 215
235 EIQVKPTCKPSWQGWNKRIEYAPGAGSL-----ALFP-GIRLETCDEPLWNIQATIEL 286
                                       KAGEVKFGCDKD-----IELNAGKEVTELE-VTNEGPK-----SLHV---GSHFHFF 149
                                                                                                                      150 EANKALKFDREKAYGKRLDIPSGNTLRIGAGQTRKVQLIPLGGSKKVIGMNGLVNNIADE 209
                                                                                                                                                              ----VPLGGP-----SGLGSGPQDS 369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      120 ELNAGKEVTELEVTNEGPKSLHVGSHFH-----FFEANKALKFDR---EKAYGKRLDI 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 CMHFLKKDEVMPGVGNMV-PDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 VKLIPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 449;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    93; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            6.2%; Score 73.5; Di
21.2%; Pred. No. 3.8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    35; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     170 PSGNTLRIGAGQTRKVQLIPLGGSK----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 6, Application US/10858730 Publication No. US20050255568A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Trueheart, Joshua
Walbridge, Michael J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Blomquist, Paul
Doten, Reed
Driggers, Edward M.
Madden, Kevin T.
O'Leary, Jessica
O'Toole, George
                                                                                                                                                                                                      210 RHKHKALDKAKSHG 223
                                                                                                                                                                                                                                             370 LSDHFTLSFWMKHG 383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Bailey, Richard B. APPLICANT: Blomquist, Paul
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity 21.2%
Matches 51, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; TYPE: PRT
; ORGANISM: Homo sapiens
US-10-821-234-1089
                                                                                                                                                              347 NGTQAVQ----
                                                                                                                                                                                                                                                                                                                            US-10-821-234-1089
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-858-730-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
                                         107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT:
APPLICANT:
```

ò 셤 ò g ò 셤 ò g

```
Sequence 1248, Application US/10793626

Sequence 1248, Application US/2050255478A1

Publication No. US20050255478A1

GENERAL INFORMATION:

APPLICANT: KIMMERLY, WILLIAM JOHN

TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS

FILE REPERENCE: PU3480US

CURRENT APPLICATION NUMBER: US/10/793,626

CURRENT FILING DATE: 2004-03-04

PRIOR PILING DATE: 1999-11-09

NUMBER OF SEQ ID NOS: 4472

SOFTWARE: Patentin Ver. 2.1

SEQ ID NO 1248

LENGTH: 311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      332 H-----ELEVISE---SLDIGQ------LIVERQRAKVSLVGKGLQAKVGLLTKM 372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DIGNINFSFITDDDGHSFHNFKKFTMP-IVQALQSMGVNAEMTGRNDIQVGQAKISGNAM 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           216 GAKVLHPDSVEYAQRFKVPLRVLSSFEAGQGTLIQFGDESELAMAASVQGIAINKALATL 275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             82 GVEATFPDGTKL------VTVNW--PIEPDE-----HFKAGEVKFGCDKDIEL 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          122 NAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKA----YGKRLDIPSG---NT 174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6 LKNLPSEESYFLFY----INRPSIIVGKNQNTIEEVNQAXIDKHQIDVVRRISGGGAVYH 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             27 GLKLNOPEAIAY----ISAHIMDEARRGKKTVAQLMEECMHFLKKDEVMPGVGNMVPDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; OTHER INFORMATION: Description of Artificial Sequence: synthetic; OTHER INFORMATION: amino acid sequence
US-10-793-626-1248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
6.0%; Score 71; DB 1; Length 311;
Best Local Similarity 18.9%; Pred. No. 3.9;
Matches 58; Conservative 35; Mismatches 100; Indels 114;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   175 LRIGAGOTRKVOLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         50 --GKKTVAQLMEECMHFLK--KDEVMPGVGNMVPDLGVEATFP------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNOPEAI--AYISAHIMDEARR--
APPLICANT: Yorgey, Peter S.

TITLE OF INVENTION: METHODS AND COMPOSITIONS FOR AMINO ACID
TITLE OF INVENTION: METHODS AND COMPOSITIONS FOR AMINO ACID
TITLE OF INVENTION: PRODUCTION
FILE REFERENCE: 14184-030001
CURRENT APPLICATION NUMBER: US/10/858,730
CURRENT PILING DATE: 2004-06-01
PRIOR APPLICATION NUMBER: US 60/475,000
PRIOR PLILING DATE: 2003-05-30
PRIOR FILING DATE: 2003-05-30
PRIOR FILING DATE: 2004-03-10
NUMBER OF SEQ ID NOS: 364
SOFTWARE: PASESEQ for Windows Version 4.0
SEQ ID NO 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 418;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               82; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match 6.1%; Score 72; DB 1;
Best Local Similarity 21.7%; Pred. No. 4.7;
Matches 50; Conservative 34; Mismatches 8;
```

```
SEQ ID NO 244
LENGTH: 501
                                                                                                              LENGTH: 437
                                                                                                                                                                                                                                                                                                               요
                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                          RESULT 9
US-10-793-626-1460

is Sequence 1460, Application US/10793626

j Sequence 1460, Application US/10793626

j Publication No. US20050255478A1

j GENERAL INFORMATION:
    TITLE OF INVENTION:
    TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
    TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
    TITLE OF INVENTION: UNMBRR: US/10/793,626
    CURRENT FILING DATE: 2044-03-04
    PRIOR APPLICATION NUMBRR: 06/164,258
    NUMBER OF SEQ ID NOS: 4472
    SOOFWARE: Patentin Ver. 2.1
    SEQ ID NO 1460

LINGHI: 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             190 TENYDTLLIGIEMSRETLYLRINKRVDI-----MLGHGLFNEVQHLVEQGFEASQSMQA 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPIEPDEHF---KAGEVKFGCD----KDIELNAGKEVTE-LEVTNEGPKSLHVGSHFHFF 149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                130 LKLKELEHLININKLHEYLASFDKESAKDIHPINRKRVLRAIEYYLKTKKLLSSRKKVQQF 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EANK-----ALKFDREKAY---GKRLDIPSGNTLRIGAGQTRKVQ-LIPLG----GSKKV 196
                      176 IDIEEFKKIILKTIFGENEVEEYILTEEDWKNIKQLSDEKYRTWEWNYGSNPKYNIEREE 235
                                                                                                                                               162 AYGK-----RLDIPSGNTLR-----IGAGQTRKVQLIPLGGSKKVIGMNGLVNNIADE 209
                                                                                                                                                                      ------EVTELEVTNEGPKSLHVGSHFHP-----FEANKALKFDREK 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       42 HIMDEARRGKKTVAQLMEECMHFLKKDEVMPGVGNMVPDLGVEATFPDGT----KLVTVN 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Labat, Ivan
APPLICANT: Stache-Crain, Birgit
APPLICANT: Andarmani, Susan
APPLICANT: Tang, Y. Tom
TITLE OF INVENTION: Methods for Diagnosis and Treatment of Preeclampsia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OTHER INFORMATION: Description of Artificial Sequence: synthetic; OTHER INFORMATION: amino acid sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    46;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5.9%; Score 70; DB 1; Length 329, 25.2%; Pred. No. 5.3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    89; Indels
 VTVNWPIEPDEHFKAGEVKFGCD-----KDIELNAGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              197 IGMNGLVNNIADERHKHKALDKAKSH 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 244 IGYKELVPVÍKGNISMENÁVEKLKOH 269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 1608, Application US/10821234 Publication No. US20050255114A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: PRT
ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  52; Conservative
                                                                                                                                                                                                                       210 RHKHKAL 216
                                                                                                                                                                                                                                                          283 EHIEEAL 289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity
                                                                        .....
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-821-234-1608
                                                                      126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                              g
                                                                                                   g
                                                                                                                                                                               В
                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                ò
                                                                                                                                           ò
ò
```

```
99 VSFADSDIVPPASTWVFPTLGIMHHNKQATENAKEEVRRILGLLDAYLKTRTFLVGERVT 158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -- DEHFKA--GEVKFGCDKDIELN 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           159 LADITVVCTLLWLYKQVLEPSFRQAFPNTNRWFLTCINQPQFRAVLGEVKL-CERMAQFD 217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     74 VGNMVPDLGVEATPP-----DGTKLVTVNWPIEPDEHFKAGE-VKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    : : : | : | | | | : | | | : | | 364 MQS--EELGLIMTFDSNNDEQLWNYDMDRMDQVLTNLIDNATRYTQAGDSIKISIDEDSD 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ---KAYGKR 166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   422 FN----ILTITDTGTGTAPEHLKQVFDRFYKVDAARKRGKQGTGLGLFICKMIIEEHGGR 477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            46 TPEFLRKF---PAGKVPAFEGDDGFCVFESNAIAY---YVSNEELRGSTPEAAAQVV-QW 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 244, Application US/10793626
Publication No. US20050255478A1
GENERAL INFORMATION:
GENERAL INFORMATION:
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
FILE REFERENCE: 1948480US
FILE REFERENCE: 1948480US
CURRENT APPLICATION NUMBER: US/10/793,626
CURRENT FILING DATE: 2004-03-04
PRIOR APPLICATION NUMBER: 60/164,258
PRIOR FILING DATE: 1999-11-09
NUMBER OF SEQ ID NOS: 4472
SOFTWARE: Patentin Ver: 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                         4 TPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGK--KTVAQLMEEC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ------MEECMHFLKKDEVMPG
                                                                                                                                                                                                                                                                                                                                                                                                    82; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OTHER INFORMATION: Description of Artificial Sequence: synthetic OTHER INFORMATION: amino acid sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 1; Length 501;
12;
                                                                                                                                                                                                                                                                                                                                          DB 1; Length 437;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          74; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   123 AGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKR 166
                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121 LNAGKEVTELEVTNEGPKSLHVGSHF-HFFEANKALKFDRE-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | : ::| :|
-----EKGSREEKQKPQAER
                                                                                                                                                                                                                                                                                                                                                                                                    65;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
5.8%; Score ob; LD ABest Local Similarity 20.0%; Pred. No. 12;
Matches 42; Conservative 38; Mismatches
                                                                                                                                                                                                                                                                                                                                       Query Match
5.9%; Score 70; DB 1
Best Local Similarity 20.5%; Pred. No. 7.8;
Matches 46; Conservative 31; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            167 LDIPSGNTLRIGAGQTRKVQLIPLGGSKKV 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     30 LNQPEAIAYISAHIMDEARRGKKTVAQL-----
CURRENT APPLICATION NUMBER: US/10/821,234
CURRENT FILING DATE: 2004-04-07
PRIOR APPLICATION NUMBER: US 60/462,047
PRIOR FILING DATE: 2003-04-07
NUMBER OF SEQ ID NOS: 1704
SOFTWARE: pt SEQ_genes Version 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        62 MHFLKKDEVMPGVGNMVPDLGV---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       87 FPDGTKLVTVNW----PIEP---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: PRT ORGANISM: Artificial Sequence
                                                                                                                                                                                                                             TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                        US-10-821-234-1608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-793-626-244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 11
US-10-793-626-244
```

```
107 KAGEVKFGCDKDIELNAGKEVTE----LEVTNEGPKSLHVGSHFHFFEANKALKFDREK 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM: Moraxella catarrhalis
                                                                                            162 AYGKRLDIPSGNTLRI-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-11-013-759-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-11-013-759-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: PRT
                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            d
                                                                                                ò
                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 13
US-11-013-759-13
is Sequence 13, Application US/11013759
is Sequence 13, Application US/11013759
is Deducation No. US20050249747A1
is GENERAL INFORMATION:
is APPLICANT: Loosenore, Sheena M.
is APPLICANT: Sasaki, Ken
is APPLICANT: Sasaki, Ken
is APPLICANT: Klein, Michel H.
is TITLE OF INVENTION: RECOMBINANT HIGH MOLECULAR WEIGHT MAJOR OUTER MEMBRANE
it TITLE OF INVENTION: PROCEEN OF MORAXELLA
is TITLE OF INVENTION: RECOMBINANT HIGH MOLECULAR WEIGHT MAJOR OUTER MEMBRANE
it TITLE OF INVENTION: PROCEEN OF MORAXELLA
is TITLE OF INVENTION NUMBER: US/19/1013,759
ic CURRENT PILING DATE: 1999-07-27
is SOFTWARE: PatentIn Ver. 2.1
is SEQ ID NO 13
il LENGTH: 1992
it TYPE: PRT
ic ORGANISM: MORAXELIA CALARTHAlis
is US-11-013-759-13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 107 KAGEVKFGCDKDIELNAGKEVTE----LEVTNEGPKSLHVGSHFHFFFANKALKFDREK 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          162 AYGKRLDIPSGNTLRI-----GAGQTRK------VQLIPLG---GSKK 195
                                                                                                                                                                                                                              APPLICANT: Sasaki, Ken
APPLICANT: Yang, Yan Ping
APPLICANT: Yang, Yan Ping
APPLICANT: Klein, Michel H.
TITLE OF INVENTION: RECOMBINANT HIGH MOLECULAR WEIGHT MAJOR OUTER MEMBRANE
TITLE OF INVENTION: PROTEIN OF MORAXELLA
FILE REPERENCE: 1038-921M16:jb
CURRENT APPLICATION NUMBER: US/11/013,759
CURRENT APPLICATION NUMBER: US/11/013,759
CURRENT FILING DATE: 2004-12-16
PRIOR PILING DATE: 1999-07-27
NUMBER OF SEQ ID NOS: 32
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 3.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5.8%; Score 68.5; DB 7; Length 1992; 25.0%; Pred. No. 92;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
5.8%; Score 68.5; DB 7; Length 1992;
Best Local Similarity 25.0%; Pred. No. 92;
Matches 38; Conservative 18; Mismatches 47; Indels 49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    47; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    196 VIGMNGLVNNIADERHKHKAL----DKAKSH 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 18; Mismatches
                                                                                                                                           ; Sequence 3, Application US/11013759; Publication No. US20050249747A1; GENERAL INFORMATION: APPLICANT: Loosmore, Sheena M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; ORGANISM: Moraxella catarrhalis
US-11-013-759-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity 25.0%
Matches 38; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LENGTH: 1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: PRT
                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
```

```
APPLICANT: LOOSMOILE, Sheena M.
APPLICANT: Assaki, Ken
APPLICANT: Assaki, Ken
APPLICANT: Assaki, Ken
APPLICANT: Assaki, Ken
APPLICANT: Assaki, Michel H.
TITLE OF INVENTION: RECOMBINANT HIGH MOLECULAR WEIGHT MAJOR OUTER MEMBRANE
TITLE OF INVENTION: PROTEIN OF MORAXELLA
TITLE OF INVENTION: PROTEIN OF MORAXELLA
FILE REFERENCE: 1038-921MS: Jb
CURRENT APPLICATION NUMBER: US/11/013,759
CURRENT FILING DATE: 2004-12-16
FRIOR APPLICATION NUMBER: US/09/361,619
FRIOR FILING DATE: 1999-07-27
NUMBER OF SEQ ID NOS: 32
SEGTHARE: PALENTING DATE: 2.1
SEQ ID NO 4
LENGTH: 2047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: LOOSMOCHE Sheena M. APPLICANT: LOOSMOCHE SHEENA M. APPLICANT: Sasaki, Ken APPLICANT: Sasaki, Ken APPLICANT: Yang, Yan Ping APPLICANT: Yang, Yan Ping APPLICANT: Yang, Yan Ping APPLICANT: Yang, Yan Ping TITLE OF INVENTION: PECOMPINANT HIGH MOLECULAR WEIGHT MAJOR OUTER MEMBRANE TITLE OF INVENTION: PROTEIN OF MORAXELLA CURRENT APPLICATION NUMBER: US/11/013,759
CURRENT FILING DATE: 2004-12-16
PRIOR APPLICATION NUMBER: US/09/361,619
PRIOR APPLICATION NUMBER: US/09/361,619
NUMBER OF SEQ ID NOS: 32
SOFTWARE: PATCHLIN Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----VQLIPLG---GSKK 195
                                                                                                                                     675 VNGSNPGTGIANTARITRDKIGFAGSDGAVDTNKPYLDQDKLQVGNVKITNTGINAGGKA 734
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               107 KAGEVKFGCDKDIELNAGKEVTE----LEVTNEGPKSLHVGSHFHFFEANKALKFDREK 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          162 AYGKRLDIPSGNTLRI-----GAGQTRK-------VQLIPLG---GSKK 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    47; Indels 49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 7; Length 2047;
                                                                                                                                                                                                                                           196 VIGMNGLVNNIADERHKHKAL-----DKAKSH 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 196 VIGMNGLVNNIADERHKHKAL----DKAKSH 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
5.8%; Score 68.5; DB
Best Local Similarity 25.0%; Pred. No. 96;
Matches 38; Conservative 18; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                             Sequence 4, Application US/11013759
Publication No. US20050249747A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 7, Application US/11013759
Publication No. US20050249747A1
GENERAL INFORMATION:
```

```
; LENGTH: 2047
; TYPE: PRT
; ORGANISM: Moraxella catarrhalis
US-11-013-759-7
```

	8	161	729	195	789		
	Gaps	KFDREK	KFTN	GSKK	NAGGKA		
147;	49;	SANKAI	G	IPLG-	TINTG		
Length 20	Indels	HVGSHFHFF	OVGAN	ΙΟΛ	OKLQVGNVKI		
7;	47;	PKSLI	01(-	Υισοί	7	-
Query Match 5.8%; Score 68.5; DB 7; Length 2047; Best Local Similarity 25.0%; Pred. No. 96;	Matches 38; Conservative 18; Mismatches 47; Indels 49; Gaps	KAGEVKFGCDKDIELNAGKEVTELEVTNEGE	683 KDGTVTFGLSQDSGLTIGKSTLNNDGLTVKDTNEQIQVGANGIKFTN 729	162 AYGKRLDIPSGNTLRIGAGQTRKVQLIPLGGSKK 195	730 VNGSNPGTGIANTARITRDKIGFAGSDCAVDTNKPYLDQDKLQVGNVKITNTGINAGGKA 789	196 VIGMNGLVNNIADERHKHKALDKAKSH 222	790 ITGLSPTLPSIADQSSRNIELGNTIQDKDKSN 821
atch cal	m	107	683	162	730	196	790
Query Match Best Local (Matches	ò	qq	ò	qq	ò	Db

Search completed: November 28, 2005, 08:25:57 Job time : 3.84635 secs

```
US-09-338-920B-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-338-920B-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-08-920-095-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 11, Appl
Sequence 2, Appli
Sequence 2, Appli
Sequence 4, Appli
Sequence 7, Appli
Sequence 22, Appli
Sequence 22, Appli
Sequence 22, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1154, App
20, Appl
20, Appl
20, Appl
11, Appl
25, Appl
25, Appl
36, Appl
37, Appl
37, Appl
36, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37, Appl
37
                                                                                                                                                                           November 28, 2005, 08:13:38; Search time 18.5013 Seconds (without alignments) 1009.915 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                  1181
1 VKLTPKEQEKFLLYYAGEVA.....ADERHKHKALDKAKSHGFIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /cgn2 6/ptodata/1/iaa/5_COMB.pep:*
/cgn2_6/ptodata/1/iaa/6_COMB.pep:*
/cgn2_6/ptodata/1/iaa/H_COMB.pep:*
/cgn2_6/ptodata/1/iaa/PCTUS_COMB.pep:*
/cgn2_6/ptodata/1/iaa/RE_COMB.pep:*
/cgn2_6/ptodata/1/iaa/RE_COMB.pep:*
5.1.6
Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5-08-687-645B-3
5-09-489-039A-9261
5-07-732-242C-1
5-09-543-681A-6101
5-09-134-001C-5049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-338-920B-11

US-08-320-095-2

US-09-338-920B-5

US-09-3318-920B-7

US-09-3318-920B-7

US-08-45-22

US-08-45-22

US-08-45-22

US-08-45-22

US-08-46-248-22

US-1012-819-154

US-08-46-248-22

US-08-46-248-20

US-08-338-920B-9

US-08-338-920B-9

US-08-46-248-25

US-08-338-920B-9

US-08-46-248-25

US-08-46-248-25

US-08-46-248-25

US-08-46-248-25

US-08-46-248-25

US-08-46-248-25

US-08-46-248-25

US-08-46-248-25

US-08-46-248-25

US-08-46-248-25

US-08-46-248-25

US-08-46-248-25

US-08-46-248-26

US-09-338-9261

US-09-338-9261

US-09-338-9261

US-09-338-9261

US-09-334-6101

US-09-543-681A-6101

US-09-543-681A-6101

US-09-543-681A-6101

US-09-543-681A-6101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       572060 segs, 82675679 residues
   version =
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                         - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                            BLOSUM62
Gapop 10.0 , Gapext 0.5
   GenCore (c) 1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Issued Patents AA:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                     US-09-904-994B-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query
Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        26469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                610.5
610.5
610.5
610.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
6010.5
                                                                                                                                                                                                                                                                                                                                                                                                                               Scoring table:
                                                                                                                                                                                                                                                                                                                                     Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score
                                                                                                                         OM protein
                                                                                                                                                                                                                                                                                                                                                                    Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Database
                                                                                                                                                                                     .
.
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Result
No.
```

```
Sequence 18, Appl
Sequence 26884, A
Sequence 116, App
Sequence 2, Appl
Sequence 5915, Ap
Sequence 10, Appl
Sequence 4, Appl
Sequence 4, Appl
Sequence 24, Appl
Sequence 24, Appl
Sequence 24, Appl
Sequence 24, Appl
Sequence 24, Appl
Sequence 24, Appl
Sequence 24, Appl
Sequence 24, Appl
Sequence 24, Appl
Sequence 24, Appl
Sequence 26886, Appl
Sequence 26886, Appl
Sequence 26886, Appl
Sequence 26886, Appl
Sequence 26886, Appl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 GRTLLKADDVMPGVAHMIHEVGIEAGFPDGTKLVTIHTPVEAGSDKLAPGEVILK-NEDI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120 ELNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGA 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 CMHFLKKDEVMPGVGNWVPDLGVEATFPDGTKLVTVNWPIEP-DEHFKAGEVKFGCDKDI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        120 TLNAGKHAVQLKVKAKGDRPVQVGSHFHFFEVNKLLDFDREKAYGKRLDIASGTAVRFEP 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
           Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 2, Application US/08920095; Patent No. 5837240; EAREAL INFORMATION:
GENERAL INFORMATION:
TITLE OF INVENTION: MULTIMERIC, RECOMBINANT UREASE VACCINE
TITLE OF INVENTION: MULTIMERIC, RECOMBINANT UREASE VACCINE
                                                                                                                                                                                                                                                                                                                                   Sequence 11, Application US/09338920B

Sequence 11, Application US/09338920B

Patent No. 6709851

GENERAL INFORMATION:
APPLICANT: Soman, Gopalan

APPLICANT: Thomas, William D., Jr.
APPLICANT: Monath, Thomas P.
TITLE OF INVENTION: Stabilization of Helicobacter Urease
FILE REFERENCE: 06132/023002

CURRENT FILING DATE: 2002-12-23

PRIOR PILING DATE: 1997-09-12

NUMBER OF SEQ ID NOS: 14

SOFTWARE: FastSEQ for Windows Version 4.0

SEQ ID NO 11

LENGTH: 234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 234;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GOTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            59; Indels
                       US-09-602-777A-18
US-09-522-91A-26884
US-09-713-681A-6085
US-09-543-681A-6085
US-09-18-328-5915
US-09-928-328-5915
US-09-602-77A-10
US-08-607-77A-10
US-08-687-645B-4
US-08-489-039A-9266
US-08-489-039A-9266
US-08-489-039A-9266
US-08-466-248-24
US-08-466-248-24
US-08-456-248-24
US-08-456-248-24
US-08-134-001C-4415
US-09-134-001C-4415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ouery Match 52.7%; Score 622; DB 2; Best Local Similarity 54.7%; Pred. No. 2.9e-62; Matches 123; Conservative 41; Mismatches 59;
                                                                                                                                                                                                                                                                          ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORGANISM: Helicobacter heilmannii
```

```
TYPE: PRT
ORGANISM: Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      02110-2804
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        USA
                                                           US-09-338-920B-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PCT-US96-05800-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COUNTRY:
     LENGTH: 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61 GRTLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            51.7%; Score 610.5; DB 1; Length 238; 52.7%; Pred. No. 6.1e-61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 5, Application US/09338920B
Patent No. 6709581
GENERAL INFORMATION:
APPLICANT: Thomas, William D., Jr.
APPLICANT: Thomas, William D., Jr.
APPLICANT: Thomas, William D., Jr.
TITLE OF INVENTION: Stabilization of Helicobacter Urease; FILE REFERENCE: 06132/023002
CURRENT APPLICATION NUMBER: US/09/338,920B
CURRENT FILING DATE: 2002-12-23
PRIOR APPLICATION NUMBER: US 08/928,081
PRIOR APPLICATION NUMBER: US 08/928,081
NUMBER OF SEQ ID NOS: 14
SOTWARRE FEASTSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181 OTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62; Indels
                                                                                                                                                                                                             OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PARCENTIN RELEGAGE #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/920,095
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                43; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                             06132/013001
                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION DATA:
APPLICATION NUMBER: US/08/431,041
FILING DATE: 28-APR-1995
ATTORNEY/AGENT INFORMATION:
                                     E: Fish & Richardson P.C.
225 Franklin Street
                                                                                                                                                                                         COMPUTER: IBM PC Compatible OPERATING SYSTEM: PC-DOS/MS-
                                                                                                                                                                                                                                                                                                                                                                                                     NAME: Clark, Paul T.
REGISTRATION NUMBER: 30,162
REFERENCE/DOCKET NUMBER: 06.
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 542-5070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TELEFAX: (617) 542-8906
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
                                                                                                              COUNTRY: USA
ZIP: 02110-2804
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            : 238 amino acids
amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local Similarity 52.7
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MOLECULE TYPE: protein
NUMBER OF SEQUENCES: 3
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                      FILING DATE:
CLASSIFICATION:
                                                                             Boston
                                     ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 3
US-09-338-920B-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-08-920-095-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                요
```

```
61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                          61 GRILLKPDDVMDGVASMIHEVGIBAMFPDGTKLVTVHTFIBANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                                                                                                                              121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                            9
                                                                                                                          1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                    Gaps
                                                    1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 238;
Length 238;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 2, Application PC/TUS9605800
GENERAL INFORMATION:
APPLICANT: OraVax, Inc.
TITLE OF INVENTION: MULTIMERIC, RECOMBINANT UREASE VACCINE
NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS:
ADDRESSEE: Fish & Richardson P.C.
STREET: 225 Franklin Street
CITY: Boston
                                                                                                                                                                                                                                                                                                                                                                                             181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE: Patentin Release #1.0, Version #1.25 CURRENT APPLICATION DATA: APPLICATION NUMBER: PCT/US96/05800 FILING DATE: 23-APR-1996 CLASSIFICATION:
Query Match 51.7%; Score 610.5; DB 2; Best Local Similarity 52.7%; Pred. No. 6.1e-61; Matches 118; Conservative 43; Mismatches 62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  51.7%; Score 610.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         06132/020001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/431,041
FILING DATE: 28-APR-1995
CLASSIPICATION DATA:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/568,122
FILING DATE: 06-DEC-1995
CLASSIFICATION:
ATTORNEY/AGENT INFORMATION:
RAME: Clark, Paul T:
REFERENCE/DOCKET NUMBER: 30,162
REFERENCE/DOCKET NUMBER: 06132/07
TELECOMMINICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC_DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEPHONE: (617) 542-5070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEFAX: (617) 542-8906
INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MOLECULE TYPE: protein
```

```
180
                                                                                                                                                                                                                                         Query Match
                                                                                                                                                       LENGTH:
                                                                                                                                                                                                                                                                                                           ઠ
                                                                                                                                                                                                                                                                                                                                      ద
                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIBPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                           61 GRTLLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 119
                                                                                                                                                                                        121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                           61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKINOPEAIAYISAHIMDEARRGKKTVAQLMEE
                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OTHER INFORMATION: includes sequences from Salmonella typhimurium and OTHER INFORMATION: Helicobacter pylori.
                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Linearthous, Harold
APPLICANT: Londono-Arcila, Patricia
APPLICANT: Londono-Arcila,
TITLE OF INVENTION: Use of salmonella vectors for
TITLE OF INVENTION: Vaccination against helicobacter infection
FILE REFERENCE: 06132/06001
CURRENT APPLICATION NUMBER: US/09/431,705
NUMBER OF SEQ ID NOS: 52
SOFTWARE: Fast SPORT F. 1999-11-01
SOFTWARE: Fast SPORT F. 1990-11-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             51.7%; Score 610.5; DB 2; Length 245; 52.7%; Pred. No. 6.4e-61; tive 43; Mismatches 62; Indels 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                      62; Indels
        Pred. No. 6.1e-61;
52.7%; Preα. ....
rive 43; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 7, Application US/09338920B
Patent No. 6709811
GENERAL INFORMATION:
APPLICANT: Soman, Gopalan
APPLICANT: Thomas, William D., Jr.
APPLICANT: Monath, Thomas P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM: Artificial Sequence
      Best Local Similarity 52.7%
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 6
US-09-338-920B-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 4
LENGTH: 245
                                                                                                                                                                                                                                                                                                                                            RESULT 5
US-09-431-705-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-431-705-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                    셤
                                                                                                                      ò
                                                                                                                                                   g
                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                      원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
```

```
GENERAL INFORMATION:

APPLICANT: Labigne, Agnes
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Stichard L.
APPLICANT: Thiberge, Jean-Michel
TITLE OF INVENTION: IMMUNOGBNIC COMPOSITIONS AGAINST
TITLE OF INVENTION: COMPOSITIONS, AND NUCLEIC ACID SEQUENCES ENCODING SAID
TITLE OF INVENTION: POLYPEPTIDES
NUMBER OF SEQUENCES: 44
CORRESPONDENCE ADDRESS:
ADDRESSEE: Finnegan, Henderson, Farabow, Garrett &
ADDRESSEE: Finnegan, Henderson, Farabow, Garrett &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                          DB 2; Length 238;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE OF INVENTION: Stabilization of Helicobacter Urease FILE REFERENCE: 06132/023002
CURRENT APPLICATION NUMBER: US/09/338,920B
CURRENT FILING DATE: 2002-12-23
PRIOR APPLICATION NUMBER: US 08/928,081
PRIOR FILING DATE: 1997-09-12
NUMBER OF SEQ ID NOS: 14
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: Floppy disk
COMPUTER: Ploppy disk
COMPUTER: PROPER FOLDS (MS-DOS
SOFTWARE: PATENTIN Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION UMBER: US/08/467,822
FILING DATE: 06-JUN-1995
CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                          51.1%; Score 603.5; DB 2
52.2%; Pred. No. 3.8e-60;
tive 43; Mismatches 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/447,177
FILING DATE: 19-MAY-1995
CLASSIFICATION: 435
FRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/432,697
FILING DATE: 02-MAY-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; Sequence 22, Application US/08467822; Patent No. 5843460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STREET: 1300 I Street, N.W
                                                                                                                                                                                                                                                                       TYPE: PRT
ORGANISM: Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                     Best Local Similarity 52.2
Matches 117; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CITY: Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-08-467-822-22
                                                                                                                                                                                                                                                                                                                          US-09-338-920B-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COUNTRY:
```

```
TELECOMMUNICATION INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ATTORNEY/AGENT INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER:
                                                                                                                                                                                                                                                                                                                                                                                  US-08-432-697-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 22, Application US/08432697

Sequence 22, Application US/08432697

Patent No. 6246330

GENERAL INFORMATION:

APPLICANT: Labigne, Agnes

APPLICANT: Sauerbaum, Sebastien

APPLICANT: Farrero, Richard L.

APPLICANT: Thiberge, Jean-Michel

TITLE OF INVENTION: IMMUNOSENIC COMPOSITIONS AGAINST

TITLE OF INVENTION: POLYPEPTIDES

TITLE OF INVENTION: POLYPEPTIDES

TITLE OF SEQUENCES: 44

CORRESPONDENCES: Pinnegan, Henderson, Farabow, Garrett &

ADDRESSEE: Pinnegan, Henderson, Farabow, Garrett &

Compensed to the composition of the composition of the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to the compensed to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60 GRTLLKPDDVMDGVASMIHBVGIBAMFPDGTKLVTVTVTTBIBANGKLVPGEL-FLKNBDIT 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 VKLTPKEQEKFILLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    50.8%; Score 600; DB 1; Length 237; 52.7%; Pred. No. 9.4e-60; Live 43; Mismatches 61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COUNTRY: USA
ZIP: 20005-3315
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC COMPATIBLE
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/432,697
FILING DATE: 02-MAY-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REGISTRATION NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 03495.0137-00000
                                                                                                                                                       03495.0137-02000
CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: Meyers, Kenneth J.
REGISTRATION NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 03499:
TELECOMMUNICATION INFORMATION:
TELEFAX: (202) 408-4400
INFORMATION FOR SEQ ID NO: 22:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STREET: 1300 I Street, N.W. CITY: Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME: Meyers, Kenneth J
REGISTRATION NUMBER: 25,
                                                                                                                                                                                                                                                                                                                                                                          LENGTH: 237 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity 52.7<sup>3</sup>
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: amino acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TOPOLOGY: linear MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STATE: D.C.
COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-08-432-697-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-08-467-822-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
```

```
GENERAL INFORMATION:

APPLICANT: Labigne, Agnes
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Ferrero, Richard L.
APPLICANT: Thiberge, Jean-Michel
TITLE OF INVENTION: HELICOBACTER INFECTION, POLYPEPTIDES FOR USE IN THE
TITLE OF INVENTION: COMPOSITIONS, AND NUCLEIC ACID SEQUENCES ENCODING SAID
TITLE OF INVENTION: POLYPEPTIDES
NUMBER OF SEQUENCES: 44
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60 GRILLKPDDVMDGVASMIHEVGIEAMFPDGTKLVTVHTPIEANGKLVPGEL-FLKNEDIT 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 MKLTPKELDK-LMHYAGELAKKRKEKGIKLNYVEAVALISAHIMEEARAGKKTAAELMQE 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     50.8%; Score 600; DB 2; Length 237; 52.7%; Pred. No. 9.4e-60; ive 43; Mismatches 61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CURRENT APPLICATION PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/466,248
FILING DATE: 06-JUN-1995
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/447,177
FILING APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION NUMBER: US 08/432,697
FILING DATE: 02-MAY-1995
CLASSIFICATION: 435
PRIOR APPLICATION NUMBER: US 08/432,697
FILING APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 0435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ADDRESSEE: Finnegan, Henderson, Farabow, Garrett
ADDRESSEE: Dunner
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 22, Application US/08466248 Patent No. 6258359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3: Floppy disk
IBM PC compatible
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STREET: 1300 I Street, N.W. CITY: Washington
TELEPHONE: (202) 408-4000
TELEFAX: (202) 408-4400
INFORMATION FOR SEQ ID NO: 22: SEQUENCE CHARACTERISTICS:
LENGTH: 237 amino acids
                                                                                                                                                                                                  LENGTH: 237 amino acids
TYPE: amino acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity 52.7%
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                        TOPOLOGY: linear
MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20005-3315
```

```
APPLICANT: Labigne, Agnes
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Staterbaum, Sebastien
APPLICANT: Staterbaum, Sebastien
APPLICANT: Staterbaum, Sebastien
APPLICANT: Thiberge, Jean-Michel
APPLICANT: Thiberge, Jean-Michel
TITLE OF INVENTION: IMMUNOGENIC COMPOSITIONS AGAINST
TITLE OF INVENTION: COMPOSITIONS, AND NUCLEIC ACID SEQUENCES ENCODING SAID
TITLE OF INVENTION: POLYPEPTIDES
NUMBER OF SEQUENCES: 44
CORRESPONDENCE ADDRESS:
  121 VKNVGDRPVQIGSHFHFFEVNRCLDFDREKTFGKRLDIASGTAVRFEPGEEKSVELIDIG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 VKLIPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        48.5%; Score 572.5; DB 1; Length 237; 50.4%; Pred. No. 1.3e-56;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ADDRESSEE: Finnegan, Henderson, Farabow, Garrett & ADDRESSEE: Dunner STREET: 1300 I Street, N.W. CITY: Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE PATENTIN Release #1.0, Version #1.30 CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/467,822 FILING DATE: 06-JUN 1995
CLASSIFICATION 435
PRIOR APPLICATION NUMBER: US 08/447,177
FILING DATE: 19-MAY-1995
CLASSIFICATION: A35
PRIOR APPLICATION NUMBER: US 08/432,697
FILING DATE: 02-MAY-1995
CLASSIFICATION: 435
PRIOR DATE: 02-MAY-1995
CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: Meyers, Kenneth J.
REGISTRATION NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 25,146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LOCATION: 1..237
OTHER INFORMATION: /note= "URE A - FIGURE 3."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      43; Mismatches
                                                                          192 GSKKVIGMNGLVNNIADERHKHKALDKAKSHGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                         Sequence 20, Application US/08467822
Patent No. 5843460
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELEPHONE: (202) 408-4000
TELEFAX: (202) 408-4400
INFORMATION FOR SEQ ID NO: 20:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    237 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches 113; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: amino acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MOLECULE TYPE: peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME/KEY: Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ZIP: 20005-3315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-08-467-822-20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                             셤
                                                  ሯ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 154, Application US/10012819
Patent No. 6916615
GENERAL INFORMATION:
APPLICANT: Legrain, Pierre
APPLICANT: Selig, Luc
APPLICANT: Rain, Jean-Christophe
TITLE OF INVENTION: Collection of Prokaryotic DNA for Two-Hybrid System, Helicobacter
TITLE OF INVENTION: pylori Protein-Protein Interactions and Applications thereof
FILE REFERENCE: B5053
CURRENT APPLICATION NUMBER: US/10/012,819
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  72 PGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIELNAGKEVTELE 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             132 VTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAGGTRKVQLIPLG 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        12 LLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEECMHFLKKDEVM 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2 MLHYAGELAKKRKEKGIKLNYVEAVALISAHIMEEARAGKKTAAELMQEGRTLLKPDDVM 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1;
                                                                                                                                                                                                                                                                                                                                                                                                       5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             48.6%; Score 573.5; DB 2; Length 228; 52.1%; Pred. No. 9.2e-57;
                                                                                                                                                                                                                                                                                                                                                         50.8%; Score 600; DB 2; Length 237;
52.7%; Pred. No. 9.4e-60;
iive 43; Mismatches 61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                179 EEKSVELIDIGGNRRIFGFNALVDRQADNESKKIALHRAKERGF 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF
                                                       03495.0137-02000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             52.1%; Pred. ...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION NUMBER: 2001-10-30
PRIOR APPLICATION NUMBER: EP 99401066.8
PRIOR FILING DATE: 1999-04-30
NUMBER OF SEQ ID NOS: 278
SOFTWARE: Patentin Ver: 2.1
SOFTWARE: Patentin Ver: 2.1
NAME: Meyers, Kenneth J.
REGISTRATION NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 0349:
TELEPHONE: (202) 408-4000
TELEFAX: (202) 408-4400
INFORMATION FOR SEQ ID NO: 22:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: PRT
ORGANISM: Helicobacter pylori
                                                                                                                                                                                           LENGTH: 237 amino acids
TYPE: amino acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                               Best Local Similarity 52.79
Matches 118, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches 111; Conservative
                                                                                                                                                                                                                                                                                 MOLECULE TYPE: protein US-08-466-248-22
                                                                                                                                                                                                                                                                   linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-012-819-154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-012-819-154
                                                                                                                                                                                                                                                                   TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
```

```
ADDRESSEE:
STREET: 13
                                                                                                                                                                                                                                                                  JS-08-466-248-20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                          ò
                                                                                              셤
                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Labigne, Agnes
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Thiberge, And Achiel
TITLE OF INVENTION: IMMUNOGENIC COMPOSITIONS AGAINST
TITLE OF INVENTION: COMPOSITIONS, AND NUCLEIC ACID SEQUENCES ENCODING SAID
TITLE OF INVENTION: POLYPEPTIDES
NUMBER OF SEQUENCES: 44
CORRESPONDENCE ADDRESS:
                                                                                                      CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                     LNAGKEVTELEVTNEGPKSLHVGSHFHFFFANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 VKLTPKEQEKFLLYYAGEVARKRKAEGLKLNQPEAIAYISAHIMDEARRGKKTVAQLMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              48.5%; Score 572.5; DB 2; Length 237; 50.4%; Pred. No. 1.3e-56; tive 43; Mismatches 67; Indels 1
                                                                                                                                                                                  181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COUNTRY: USA
ZIP: 20005-3315
COMPUTER READABLE FORM:
MEDLUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/432,697
FILING DATE: O2-MAY-1995
CLASSIFICATION: 424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ADDRESSEE: Finnegan, Henderson, Farabow, Garrett
ADDRESSEE: Dunner
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COTHER INFORMATION: /note= "URE A - FIGURE 3."
US-08-432-697-20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATTORNEY/AGENT INPORMATION:
NAME: Meyers, Kenneth J.
REGISTRATION NUMBER: 25,146
REESENCE/DOCKET NUMBER: 25,146
RELECOMMUNICATION INPORMATION:
TELEPHONE: (202) 408-4000
TELEPHONE: (202) 408-4400
INPORMATION FOR SEQ ID NO: 20: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                    Sequence 20, Application US/08432697 Patent No. 6248330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          : 1300 I Street, N.W. Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity 50.45
Matches 113; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MOLECULE TYPE: peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY: Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   linear
                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION:
                                                                                                                                                                                                                                                            RESULT 12
US-08-432-697-20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STREET:
                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                               d
                                                                           ò
                                                                                                                                                           ò
```

```
HELICOBACTER INFECTION, POLYPEPTIDES FOR USE IN THE COMPOSITIONS, AND NUCLEIC ACID SEQUENCES ENCODING SAID POLYPEPTIDES
61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG
                                                                                                                                                                                                                                      180 EEKSVELIDIGGNKRIYGFNSLVDROADADGKKLGLKRAKEKGF 223
                                                                                                                                                                                                                                                                                                                                                                               Sequence 20, Application US/08466248

Patent No. 6258359

GENERAL INFORMATION:
APPLICANT: Labigne, Agnes
APPLICANT: Barerbaum, Sebastien
APPLICANT: Perrero, Richard L.
APPLICANT: Thiberge, Jean-Michel,
APPLICANT: Thiberge, Jean-Michel,
APPLICANT: Thiberge, Jean-Michel,
APPLICANT: Thiberge, Jean-Michel,
APPLICANT: Thiberge, Jean-Michel,
APPLICANT: Thiberge, Jean-Michel,
ATILE OF INVENTION: HELICOBACTER INFECTION, POLYPEPTIDES
TITLE OF INVENTION: POLYPEPTIDES
NUMBER OF SEQUENCES: 4

CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                           181 OTRKVOLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADDRESSEE: Finnegan, Henderson, Farabow, Garrett
ADDRESSEE: Dunner
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOFTWARE: Patentin Release #1.0, Version #1.30 CURRENT APPLICATION DATE: US/08/466,248 FILING DATE: 06-JUN-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note= "URE A - FIGURE 3."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NAME: Meyers, Kenneth J.
REGISTRATION NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 03495.0137-02000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           48.5%; Score 572.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/447,177
FILING DATE: 19-MAY-1995
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/432,697
FILING DATE: 02-MAY-1995
CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELECOMMUNICATION INFORMATION:
TELEPHONE: (202) 408-4000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1300 I Street, N.W
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEFAX: (202) 408-4400
INFORMATION FOR SEQ ID NO: 2
SEQUENCE CHARACTERISTICS:
LENGTH: 237 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TOPOLOGY: linear
MOLECULE TYPE: peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ZIP: 20005-3315
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LOCATION: 1..237
; COTHER INFORMATION:
US-08-466-248-20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME/KEY: Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CITY: Washington STATE: D.C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: amino acid
STRANDEDNESS: sir
TOPOLOGY: linear
```

```
61 CMHFLKKDEVMPGVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIE 120
                                                                                                                                              121 LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                                                                                                                                                                                    LNAGKEVTELEVTNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAG 180
                                                   1 VKLTPKEQEKFLLYYAĞEVARKRKAEĞLKINQPEAIAYISAHIMDEARRĞKKTVAQLMEE 60
                                                                          1 MKLTPKELDKLMLHYAGRLAEERLARGVKLNYTEAVALISGRVMEKARDGNKSVADLMGE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 VKLIPKEQEKFLLYYAGEVARKRKAEGLKLNOPEAIAYISAHIMDEARRGKKTVAQLMEE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 2; Length 237;
                                                                                                                                                                                                                                                                                           181 QTRKVQLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 68; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OTRKVOLIPLGGSKKVIGMNGLVNNIADERHKHKALDKAKSHGF 224
                  67; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                GENERAL INFORMATION:

APPLICANT: Soman, Gopalan
APPLICANT: Thomas, William D., Jr.
APPLICANT: Thomas, William D., Jr.
TITLE OF INVENTION: Stabilization of Helicobacter Urease
FILE REFERENCE: 06132/023002
CURRENT APPLICATION NUMBER: US/09/338,920B
CURRENT FILING DATE: 2002-12-23
PRIOR APPLICATION NUMBER: US 08/928,081
PRIOR FILING DATE: 1997-09-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 13, Application US/09338920B
Patent No. 6709851
GENERAL INFORMATION:
APPLICANT: Soman, Gopalan
APPLICANT: Thomas, William D., Jr.
TITLE CONT: Monath, Thomas P.
TITLE OF INVENTION: Stabilization of Helicobacter Urease
FILE REFERENCE: 06132/023002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 48.0%; Score 566.5; DB 2
Best Local Similarity 50.0%; Pred. No. 6.1e-56;
Matches 112; Conservative 43; Mismatches 68
 ; Pred. No. 1.3e-56; 43; Mismatches 67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQ ID NOS: 14
SOFWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 9
LENGTH: 237
                                                                                                                                                                                                                                                                                                                                                                                               Sequence 9, Application US/09138920B Patent No. 6709851
50.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM: Helicobacter felis
                  Matches 113; Conservative
 Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-338-920B-13
                                                                                                                                                                                                                                                                                                                                                               RESULT 14
US-09-338-920B-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-338-920B-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: PRT
                                                                                   qq
                                                                                                                        δ
                                                                                                                                                       셤
                                                                                                                                                                                                ò
                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8 6
```

```
GVGNMVPDLGVEATFPDGTKLVTVNWPIEPDEHFKAGEVKFGCDKDIELNAGKEVTELEV 132
                                                                                                                                                                                                                                                                                                                                                                                                                                     TNEGPKSLHVGSHFHFFEANKALKFDREKAYGKRLDIPSGNTLRIGAGQTRKVQLIPLGG 192
                                                                                                                                                                                                                                                                                                                                                                                       13 LYYAGEVARKRKAEGLKINQPEAIAYISAHIMDEARRGKKTVAQIMEECMHFLKKDEVMP
                                                                                                                                                                                                                                                        ä
                                                                                                                                                                                                                   Length 213;
                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                   Query Match 46.1%; Score 544.5; DB 2; Best Local Similarity 52.3%; Pred. No. 1.6e-53; Matches 112; Conservative 36; Mismatches 65;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               180 NORIFGFNDLNNGOVNEDNKRKALAAAKAKGFIK 213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SKKVIGMNGLVNNIADERHKHKALDKAKSHGFIK 226
CURRENT APPLICATION NUMBER: US/09/338,920B
CURRENT FILING DATE: 2002-12-23
PRIOR APPLICATION NUMBER: US 08/928,081
PRIOR FILING DATE: 1997-09-12
NUMBER OF SEQ ID NOS: 14
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 13
LENGTH: 213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Search completed: November 28, 2005, 08:25:40 Job time : 19.5013 sec8
                                                                                                                                                TYPE: PRT ORGANISM: Helicobacter mustelae
                                                                                                                                                                                    US-09-338-920B-13
                                                                                                                                                                                                                                                                                                                                                                                                                                         133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 193
                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                               ð
```

```
GenCore version 5.1.6 (c) 1993 - 2005 Compugen Ltd.
                 Copyright
```

OM protein - protein search, using sw model

Run on:

November 28, 2005, 08:00:02; Search time 16.4836 Seconds (without alignments) 1497.963 Million cell updates/sec

1 MKMKKQEYVNTYGPTKGDKV.....KLCTSKPTSQVPLAQRYTFF US-09-904-994B-3 2999 Title: Perfect score: Sequence:

568

BLOSUM62 Gapop 10.0 , Gapext 0.5 Scoring table:

283416 seqs, 96216763 residues Searched:

283416 Total number of hits satisfying chosen parameters:

Minimum DB seq length: 0 Maximum DB seq length: 200000000

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

Database

PIR 80:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

	script	i w	3.5.1.	urease (EC 3.5.1.5	w		urease (EC 3.5.1.5	urease alpha chain	urease (EC 3.5.1.5	urease alpha subun	grp	۲.	3.5.1.	urease (EC 3.5.1.5	3.5	urease (EC 3.5.1.5	probable urease st		probable urease F1		urease alpha subun		3		3.5.1.	3.5.1.	3.5.1.	3.5.1.	urease (EC 3.5.1.5	urease complex com
COLUMNIA		URKCBP	835291	C36950	F83681	D69729	875169	AG2264	S47104	H83037	C75586	H64075	C36138	S42607	D43719	508480	G85654	D90794	A96699	A97648	AG2871	AF3458	E90027	S38485	AC0325	URJB	AI3332	T37939	602	G82890
	DB	1	-	~	7	7	7	~	~	~	~	~	ч	~	٦	н	7	~	7	7	7	7	~	7	~	-	N	~	~	7
	Query Match Length	569	269	569	571	569	569	568	569	566	268	572	267	570	267	267	268	568	838	569	569	570	571	571	572	4	573	835	7	9
de	Query	76.6		67.6	67.2	•	64.3	63.3	63.0	61.1		6.09	6.09	60.8	60.5	60.3	60.3	60.3	60.0	59.8	٥.	59.5	ė,	6.	6	œ.	57.2	7.	57.0	9.99
	Score	2297	2244	2028.5	2016.5	1981.5	1927.5	1897	1889.5	1832	1832	1826	1825	1822	1813	1809	1809	1809	1799.5	1792.5	1792.5	1785	1784.5	1780.5	1779.5	1753.5	1715	1710.5	70	1696.5
	Result No.	1	7	٣	4	ιΩ	φ	7	œ	6	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29

le uz	(EC	urease (EC 3.5.1.5	E	(EC	urease (EC 3.5.1.5	collapsin response	dihydropyrimidinas	dihydropyrimidinas	dihydropyrimidinas	hypothetical prote	Ulip protein - mou	dihydroorotase (EC	allantoinase BH230	aminoacylase (EC 3	dihydropyrimidinas
B70665	S10032	T29056	T50711	T08993	S42592	S58889	JC5317	S49985	JC5316	A83673	S55525	AC3412	E83938	JC4394	JC5318
							_		_						
~	+	10	N	~	~	~	0	N	N	~	N	~	0	~	2
577 2	614 1	558 2	569 2	129 2	131 2	572 2	572 2	572 2	572 2	448 2	570 2	478 2	438 2	484 2	570 2
		40.9 558 2													
53.7		40.9	38.2	14.4	10.6	6.2	5.8	5.8	5.7	5.5	5.4	5.4	5.4		

ALIGNMENTS

	RESULT 1 URKCBP urease (EC 3.5.1.5) 62K chain - Helicobacter pylori (strains 26695, J99, and others) N;Alternate names: urease beta chain; urease chain B; urease large subunit
	C;Species: Helicobacter pylori C;Date: 30-Sep-1991 #Bequence_revision 02-Dec-1994 #text_change 05-Oct-2004 C;Accession: B38337; H64528; A71977; F41834; S07885; S12487; A49215; B61371; A35306; B41 R;Labigne, A.; Cussac, V.; Courcoux, P.
	J. Bacceriot. 175, 1940-1951, 1991. A, Title: Shuttle cloning and nucleotide sequences of Helicobacter pylori genes responsib A, Reference number: A38537; MUID:91161505; PMID:2001995 A: Accession: B38537
	A; Molecule type: DNA A; Molecule type: DNA A; Residues: 1-569 <lab> A; Residues: 1-569 <lab> A; Cross-references: UNIPROT: P14917; UNIPARC: UPI000002C20A; CB: M60398; NID: G149007; PIDN: R; Tomb, J.F.; White, O.; Kerlavage, A.R.; Clayton, R.A.; Sutton, G.G.; Fleischmann, R.D. Peterson, S.; Loftus, B.; Richardson, D.; Dodson, R.; Khalak, H.G.; Glodek, A.; McKenne Peterson, J.D.; Kellav, J. M.; Cotton, M.D.; Weidman, J.M.; Fujii, C.; Bowman, C.; Watthey, L.</lab></lab>
	Nature 388, 539-547, 1997 AjAduthors: Wallin, B.; Hayes, W.S.; Borodovsky, M.; Karpk, P.D.; Smith, H.O.; Fraser, C. AjTitle: The complete genome sequence of the gastric pathogen Helicobacter pylori. A;Reference number: A64520; MUID:97394467; PMID:9252185
	A, Accession: H64528 A, Status: nucleic acid sequence not shown; translation not shown A, Molecule type: DNA A, Residues: 1-569 <tom></tom>
	A,Cross-references: UALFACCULUOUUUZCZUA; GB:ABUUUSZY; GB:ABUUUSZY; GB:ABUUUSZY; GB:ABUUUSZY; GB:ABUUUSZY; GB:ABUUUSZY; GB:ABUUNSZY; GB:
	Nature 397, 176-180, 1999 A,Title: Genomic sequence comparison of two unrelated isolates of the human gastric path A,Reference number: A71800; MUID:99120557; PMID:9923682 A,Accession: A71977
	A;Molecule type: DNA A;Residues: 1-56 -ARN> A;Cross-references: UNIPARC:UPI00002C220A; GB:AE001446; GB:AE001439; NID:94154573; PIDN: A;Experimental source: strain J99
	R;Cussac, V.; Ferrero, R.L.; Labigne, A. J. Bacteriol. 174, 2466-2473, 1992 A;Title: Expression of Helicobacter pylori urease genes in Escherichia coli grown under A;Reference number: A41834; MUID:92210488; PMID:1313413 A;Accession: F41834
<u></u>	A;Status: preliminary A;Molecule type: DNA A;Molecule type: DNA A;Rosidues: 565-569 «CUS> A;Cross-references: UNIPARC:UPI000002D2AD; GB:M84338 A;Cross-references: UNIPARC:UFI000002D2AD; GB:M84338 R;Clayton, C.L.; Pallen, M.J.; Kleanthous, H.; Wren, B.W.; Tabaqchali, S. R;Clayton, C.L.; Pallen, M.J.; Kleanthous, H.; Wren, B.W.; Tabaqchali, S. A;Title: Auclecide agquence of two genes from Helicobacter pylori encoding for urease 8 A;Reference number: S07884; MUID:90221820; PMID:2326167 A;Accession: S07885

361

301

421 422 481 482 541 542

```
A;Accession: S35291
A;Molecule type: DNA
A;Residues: 1-569 <FER>
A;Cross-references: UNIPROT:Q08716; UNIPARC:UPI000002F34B; EMBL:X69080; NID:g396160; PIDI
C;Genetics:
A;Gene: ureB
C;Complex: heterodimer
C;Function:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A)Description: catalyzes the hydrolysis of one molecule of urea to carbon dioxide and two C; Superfamily: urease, alpha subunit; urease 62K chain homology C; Superfamily: urease, alpha subunit; urease 62K chain protein; nickel F; 1-569/Product: urease 62K chain #status experimental <MAT>
F; 4-552/Domain: urease 62K chain homology <UG2>
F; 136, 138, 219, 362/Binding site: nickel 2 (His, His, Lys, Asp) #status predicted F; 219, 248, 274/Binding site: nickel 1 (Lys, His, His) #status predicted F; 219, 248, 274/Binding site: carbon dioxide (Lys) (covalent) (by urease activase) #status predicter F; 221, 322/Active site: His #status predicted
                                                                                                                                                                                           183 LRAAEEYSMNLGFLAKGNASNDASLADQIEAGAIGFKIHEDWGTTPSAINHALDVADKYD 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKMNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3 KISRKEYVSMYGPITGDRVRLGDIDLILEVEHDCTITYGEEIKFGGGKTIRDGMSQINSPS 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NyAlternate names: urease beta chain
C;Species: Helicobacter felis
C;Dacession: S3291
R;Ferrero, R.L.; Labigne, A.
Mol. Microbiol. 9, 322-333, 1993
A;Fitle: Cloning, expression and sequencing of Helicobacter felis urease gen
A;Reference number: S35290; MUID:94018627; PMID:8412683
                                                                                                                                                                                                                                                                                                                     243 VQVAIHTDTLNEAGCVEDTMAAIAGRIMHTFHTEGAGGGHAPDIIKVAGEHNILPASTNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  363 SQAMGRVGEVITRIWQTADKNKKEFGRLKEEKGDNDNFRIKRYLSKYTINPAIAHGISEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            482 GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKŢ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   483 GKAKYDANITFVSQAAYDKGIKEELGLERQVLPVKOCRNITKKDMQFNDTTAHIEVNPET
                                                                                                                                                                                                                                                                                                                                                                                                                              302 TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         362 SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                422 IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .
,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 569;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  74.8%; Score 2244; DB 1; 72.5%; Pred. No. 8.1e-153; tive 71; Mismatches 85;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             urease (EC 3.5.1.5) 62K chain - Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 : ||||| :: | ||| :: | 543 YHVFVDGKEVTSKPANKVSLAQLFSIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best Local Similarity 72.58
Matches 411; Conservative
                                                                                                                                                                                                                                                                        242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             423
                                                                                                             182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                              엄
                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Title: Purification and N-terminal analysis of urease from Helicobacter pylori.

A; Reference number: A41502; MUD: 90202165; PMID: 2318539
A; Accession: B41502
A; Molecule type: protein
A; Residues: 1-5, 'A', 7-15 < HUA>
A; Cross-references: UNIPARC: UP10000172DA8
C; Gemetics:
A; Gene: ureB; HP0072
C; Complex: heterodimer of 26K chain (see PIR: URKCAP) and 62K chain
C; Function:
A; Description: catalyzes the hydrolysis of one molecule of urea to carbon dioxide and tw
C; Superfamily: urease, alpha subunit; urease 62K chain homology
C; Superfamily: urease, alpha subunit; urease 62K chain homology
C; Superfamily: urease, alpha subunit; urease 62K chain homology
C; Superfamily: urease, alpha subunit; urease 62K chain homology
C; Superfamily: urease 62K chain homology (62>
F; 136, 138, 219, 362/Binding site: nickel 1 (Lys, His, His) #status predicted
F; 219, 248, 274/Binding site: nickel 1 (Lys, His, His) #status predicted
F; 219, 221, 322/Active site: His #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Accession: A49215
A; Status: preliminary
A; Macestalon: A49215
A; Status: preliminary
A; Molecule type: protein
A; Molecule type: protein
A; Molecule type: protein
A; Residues: 1-12 < TUR.
A; Cross-references: UNIPARC:UPI00000BB645; PIDN:AAB24355.1; PID:g260964
A; Cross-references: UNIPARC:UPI0000BB645; PIDN:AAB24355.1; PID:g260964
A; Molecule extracted from NCEI backbone (NCBIP:119482)
A; Note: sequence extracted from NCEI backbone (NCBIP:119482)
A; Note: sequence extracted from NCEI backbone (NCBIP:119482)
A; Title: Characterization of the Helicobacter pylori urease and purification of the Helicobacter pylori urease and purification of the Molecule type: protein
A; Reference number: A61371; MUID:91312104; PMID:1857197
A; Residues: 1-21, C', 23-36, C', 28, I', 30 < EVA>
A; Residues: 1-21, C', 23-36, C', 28, I', 30 < EVA>
A; Cross-reference: UNIPARC:UPI0000172DA7
A; Cross-reference: A35306; MUID:90264448; PMID:2188975
A; Accession: A35306
A; Molecule type: protein
A; Residues: 1-20 < DUN>
A; Robley, H.L.T.
A; Mobley, H.L.T.
Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B; Infect: Immun. 58, 992-998, 1990
B
                                                                                                                                                                                                                                                                                                                                             A; Molecule type: DNA
A; Molecule type: DNA
A; Residues: 1-9, 7, 7, 105-180, F, 182-192, F, 194-217, L, 219-272, Y, 274-539, A; Cross-references: UNIPARC: UP1000002DB18; EMBL: X17079; NID: G43633; PIDN: CAA34933.1; PID R; Turbett, G.R.; Hoj P.B.; Horne, R.; Mee, B.J.
A; Turbett, G.R.; Hoj P.B.; Horne, R.; Mee, B.J.
A; Tirfect. Immun. 60, 529-5266, 1992
A; Title: Purification and characterization of the urease enzymes of Helicobacter species A; Reference number: A49215; MUID: 93084378; PMID: 1452359
A;Molecule type: DNA
A;Residues: 1-9,'A',11-18,'A',20-103,'T',105-180,'F',182-192,'F',194-217,'L',219-272,'Y'
A;Closs-references: UNIPARC:UF10000172DA6; EMBL:X17079
R;Claycon, C.L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       63 KEELDLIITNALIVDYTGIYKADIGIKDGKIAGIGKGGNKDMQDGVKNNLSVGPATEALA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2 KWKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ..
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          76.6%; Score 2297; DB 1; Length 569; llarity 73.4%; Pred. No. 1.3e-156; Conservative 76; Mismatches 75; Indels
                                                                                                                                                                                                                       submitted to the EMBL Data Library, October 1989
A;Reference number: $12487
A;Accession: $12487
A;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local Sim
nes 416;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         122
```

депев

ö

Gaps

8 셤 ò g ò g

엄

8 8 8

ద ò g ð 셤 ò 셤 ઠ g ò 셤

```
A,Status: preliminary
A;Molecule type: DNA
A;Residues: 1-571 <STO>
A;Cross-references: UNIPARC:UP100000C3801; GB:AP001507; GB:BA000004; NID:g10172612; PIDN
A;Experimental source: strain C-125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Cydccession: P83681

Rytakani, H.; Nakasone, K.; Takaki, Y.; Maeno, G.; Sasaki, R.; Masui, N.; Fuji, F.;
Nucleic Acids Res. 28, 4317-4331, 2000

Ayritle: Complete genome sequence of the alkaliphilic bacterium Bacillus halodurans
A;Reference number: A83650; MUID:20512582; PMID:11058132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  358
                                                                   362
                                                                                                    421
                                                                                                                                    422
                                                                                                                                                                                           541
                                                                                                                                                                                                                                                                             542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TNPTRPFTVNTIDEHLDMLMVCHHLDPNVPEDVAFADSRIRPETIAAEDILQDLGVISMI 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    417
                                                                                                                                                                        IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                urease alpha subunit ureC [imported] - Bacillus halodurans (strain C-125)
C,Species: Bacillus halodurans
C,Date: 01-Dec-2000 #sequence_revision 01-Dec-2000 #text_change 05-Oct-2004
                                                      RMDVQVAIHTDTLNEAGFVEDTIKAIGDRVIHTYHTEGAGGGHAPDIMKVAGLPNVLPSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TTPTIPTIPTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMT
VQVAIHTDTLNEGGFVEDTLKAIDGRVIHTYHTEGAGGGHAPDIIKAAGFPNILPSSTNP
                                                                                                      SQAMGRAGEVIPRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                  59 SPDENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       119 ALAGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITFGKWNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          179 HRMLRAABEYSMNVGFLGKGNSSSKKQLVBQVEAGAIGFKLHEDWGTTPSAIDHCLSVAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SSDSQAMGRAGEVIPRIWQTADKNKKEFGKLPED-GKDNDNFRIKRYISKYINPALTHG
                                     TI PYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                           GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 MKMKKQEYVNTYGPIKGDKVRLGDIDLWAEVEHDYTTYGEELKFGAGKTIREGMGQS--N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EYDVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGHSPDVITMAGELNILPSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 571;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Gene: ureC
C;Superfamily: urease, alpha subunit; urease 62K chain homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; Pred. No. 1.6e-136; 88; Mismatches 112;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  67.2%; Score 2016.5;
                                                                                                                                                                                                                                                                                                                542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                  64.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity 64.48
Matches 368; Conservative
     243
                                      302
                                                                        303
                                                                                                      362
                                                                                                                                        363
                                                                                                                                                                           422
                                                                                                                                                                                                           423
                                                                                                                                                                                                                                             482
                                                                                                                                                                                                                                                                              483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C;Genetics:
                                 9
9
                                                                                                                                 g
                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
   유
                                                                                            ⋧
                                                                                                                                                                         ò
                                                                                                                                                                                                                                         충
                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         걍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A,Molecule type: DNA
A,Residues: 1-569 <MAE>
A;Cross-references: UNIPROT:007397; UNIPARC:UPI0000137D67; GB:D14439; NID:g393296; PIDN:
C;Superfamily: urease, alpha subunit; urease 62K chain homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 3

(236950

urease (EC 3.5.1.5) 61k chain - Bacillus sp. (strain TB-90)

NyAlternate names: ureC protein

C;Species: Bacillus sp.

C;Date: 07-01u-1995 #sequence_revision 07-Jul-1995 #text_change 05-Oct-2004

C;Accession: C36950

R;Maeda, M.; Hidaka, M.; Nakamura, A.; Masaki, H.; Uozumi, T.

J; Bacteriol: 176, 432-442, 1994

A;Title: Cloning, sequencing, and expression of thermophilic Bacillus sp. strain TB-90

A;Reference number: A36950; MUID:94117379; PMID:8288539

A;Status: preliminary

A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2
                                                        VQVAIHTDTLNEAGCVEDTLEAIAGRTIHTFHTEGAGGGHAPDVIKWAGEFNILPASTNP 302
                                                                                                                                                                                               422
                                                                                                                                                                                                                                                                                                                481
                                                                                                                                                                                                                                                                                                                                                  482
                                                                                                                                                                                                                                                                                                                                                                                                                     542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 242
     123 AEGLIVTAGGIDTHIHPISPQQIPTAFASGVTTMIGGGTGPADGTNATTITPGRANLKSM 182
                                                                                                                                                                           TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361
                                                                                                                                                                                                                                             SQAMGRAGEVIPRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY 421
                                                                                                                                                                                                                                                                                                                                                                                     GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGGBPDVITWAGELNILPSSTTP 301
                                                                                                          VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 122 GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            64
                                                                                                                                                                                                                                                                                                                                                                                                     IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                    LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3 MKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSN-SPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 569;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        77; Mismatches 112; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       67.6%; Score 2028.5; DB 2; 66.1%; Pred. No. 2.2e-137;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5-552/Domain: urease 62K chain homology <U62>
                                                                                                                                                                                                                                                                                                                                                                                                                                                       542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches 375; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Keywords: hydrolase
                                                                                                                                          243
                                                                                                                                                                                                                                             362
                                                                                                                                                                                                                                                                                                                422
                                                                        183
                                                                                                        242
                                                                                                                                                                           302
                                                                                                                                                                                                           303
                                                                                                                                                                                                                                                                                363
                                                                                                                                                                                                                                                                                                                                                  423
                                                                                                                                                                                                                                                                                                                                                                                   482
                                                                                                                                                                                                                                                                                                                                                                                                                     483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       242
                                      182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
```

à 엄 Š g ð 셤 ð g ò

F.; Hira

and

417 418 477

478

538

음

셤 ò 요 δ g

ò

```
urease (EC 3.5.1.5) alpha chain - Synechocystis sp. (strain PCC 6803)
N;Alternate names: protein s111750
C;Species: Synechocystis sp.
A;Variety: PCC 6803
C;Date: 25-Apr-1997 #sequence_revision 25-Apr-1997 #text_change 09-Jul-2004
C;Accession: S75169
R;Kaneko, T.; Sato, S.; Kotani, H.; Tanaka, A.; Asamizu, E.; Nakamura, Y.; Miyajima, N.; Okumura, S.; Shimpo, S.; Takeuchi, C.; Wada, T.; Watanabe, A.; Yamada, M.; Yasuda DNA Res. 3, 109-116, 1996
A;Title: Sequence analysis of the genome of the unicellular cyanobacterium Synechocystis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Cross-references: UNIPROT:P73061; UNIPARC:UPI0000137D79; EMBL:D90903; GB:AB001339; NID A;Note: the nucleotide sequence was submitted to the EMBL Data Library, June 1996 C;Genetics: A;Gene: urec A;Gene: urec C;Seperfamily: urease, alpha subunit; urease 62K chain homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61 DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121 AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHR 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PIIPYINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS 360
                                                                                                                          AGEGMILTAGGIDAHVHFICPQQIETALASGVTTLVGGGTGPAAGTKATTCTPGAMNIHR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 418 VSEYIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREM
                                                                                                                                                                                                                                              478 FGHHGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 KWKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSN-SP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RMDRHSYAHTFGPTVGDKVRLADTELFIEVEQDYATYGDEVKFGGGKVIRDGMGQSPLSR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                        SSDSQAMGRAGEVIPRTWQTADKNKKEFGKLP-EDGKDNDNFRIKRYISKYTINPALTHG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              #status
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .;
m
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 64.3%; Score 1927.5; DB 2; Length 569; Best Local Similarity 62.3%; Pred. No. 3.8e-130; Matches 354; Conservative 97; Mismatches 114; Indels 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A,Accession: S75169
A,Status: nucleic acid sequence not shown; translation not shown
A,Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C;Superfamily: urease, alpha subunit; urease 62K chain homolog
C;Keywords: hydrolase; metalloprotein; nickel
F;5-552/Domain: urease 62K chain homology <u62>
F;136,138,219,362/Binding site: nickel 2 (His, His, Lys, Asp)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Reference number: S74322; MUID:97061201; PMID:8905231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DPKTFEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Residues: 1-569 < KAN>
                                                                                                                                                                                                                                                                      419
                                                                                                                                                                                                                                                                                                                                                                                                                                                 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                           359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            875169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                            g
                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                        ò
                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Urease (alpha subunit) urec - Bacillus subtilis
C;Species: Bacillus subtilis
C;Species: Bacillus subtilis
C;Species: Bacillus subtilis
C;Species: Bacillus subtilis
C;Species: Bacillus subtilis
C;Species: Bacillus subtilis
C;Sacession: D69729
R;Kunst, F; C; Ogaawara, N.; Moszer, I.; Albertini, A.M.; Alloni, G.; Azevedo, V.; Berter
C; Bron, S.; Brouillet, S.; Bruschi, C.V.; Caldwell, B.; Capuano, V.; Carter, N.M.; Chc
A.; Ehrlich, S.D.; Emmerson, P.T.; Entiat, M.; Fujita, Y.; Fuma, S.; Galizzi, A.; Galler
A;Authors: Foulger, D.; Fritz, C.; Fujita, M.; Fujita, Y.; Fuma, S.; Galizzi, A.; Galler
A;Authors: Foulger, D.; Fritz, C.; Fujita, M.; Fujita, Y.; Fuma, S.; Galizzi, A.; Galler
A;Authors: Rougler, D.; Fritz, C.; Fujita, M.; Ruffer, K.; Hosono, S.; Hullo, M.F.
Koetter, P.; Koningstehn, G.; Krody, S.; Kumano, M.; Kurita, K.; Japidus, A.; Ladallori, A.; Authors: Lauber, J.; Lazarevic, V.; Lee, S.M.; Eevine, M.; Sadaie, Y.; Sato, T.; Saconlon, A;Authors: Schleich, S.; Schroeter, R.; Scoffone, F.; Sekiguchi, J.; Sekowska, A.; Sacoffone, F.; Sekiguchi, J.; Sekowska, A.; Scoffone, F.; Sekiguchi, J.; Sekowska, A.; Scoffone, F.; Sekiguchi, J.; Sekowska, A.; Scoffone, F.; Sekiguchi, J.; Sekowska, A.; Sandon, A;Authors: Yoshikawa, H.F.; Zumatein, E.; Yoshikawa, H.; Danchin, A.
A;Authors: Yoshikawa, H.F.; Zumatein, E.; Yoshikawa, H.; Danchin, A.
A;Reference number: A69580; MUID:98044033; PMID:9384377
A;Accession: D69729
A;Scatus: preliminary; mucleic acid sequence not shown; translation not shown
A;Residues: 1-569 <KUN>
A;Residues: 1-569 <KUN>
A;Residues: 1-569 <KUN>
A;Residues: 1-569 <KUN>
A;Residues: 1-569 <KUN>
A;Residues: 1-569 <KUN>
A;Residues: 1-569 <KUN>
A;Residues: 1-569 <KUN>
A;Residues: 1-569 <KUN>
A;Residues: 1-569 <KUN-
A;Residues: 1-569 <KUN-
A;Residues: 1-569 <KUN-
B;Residues: 1-569 <KUN-
B;Residues: 1-569 <KUN-
B;Residues: 1-569 <KUN-
B;Residues: 1-569 <KUN-
B;Residues: 1-569 <KUN-
B;Residues: 1-569 <KUN-
B;Residues: 1-569 <KUN-
B;Residues: 1-569 <KUN-
B;Residues: 1-569 <KUN-
B;Residues: 1-569 <KUN-
B;Residu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181 ARMLEAAEEFPINVGFLGKGNASDKAPLIEQVEAGAIGLKLHEDWGTTPSAIKTCMEVVD 240
                                                                                        119 ALAGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNL 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                299 TTPTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMT 358
   SSDSQAMGRVGEVIIRTWQTADKMKKQRGALAEDQGKGNDNVRIKRYVSKYTINPAITHG 420
                                                             477
                                                                                                                                                                                 537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FCHHGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SPDENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HRMLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EYDVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYH1EGAGGGHSPDV1TMAGELN1LPSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSN--
                                                             VSEYIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          269;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              alpha subunit; urease 62K chain homology
62K chain homology <U62>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 66.1%; Score 1981.5; DB 2; Best Local Similarity 62.5%; Pred. No. 5.2e-134; Matches 357; Conservative 95; Mismatches 114;
                                                                                                                                                                                                                                                                                                  DPKTFEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                   A,Gene: ureC
C,Superfamily: urease,
F,3-552/Domain: urease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  239
                                                                                                                                                                                                                                        481
      361
                                                                                                                                                                          478
                                                                                                                                                                                                                                                                                                  538
                                                                                                                                                                                                                                                                                                                                                            541
```

7

9 63

> ઠે 셤 8 В

8 6

ઠ g ò g 8,

240

241

181

Š g ઠ g Š 요 Š 유

```
A;Molecule type: DNA
A;Residues: 1-569 <MOE>
A;Cross-references: UNIPROT:P41020; UNIPARC:UPI0000137D66; EMBL:X78411; NID:G498708; PIC
C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DNA-fragment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                predicted
                                                                                                                                             118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TTPTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMT 358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TNPTRPFTVNTIDEHLDMLMVCHHLKQNIPEDVAFADSRIRPETIAAEDILHDLGIISMM 359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GHHGKAKFDISITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVD 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    59
#text_change 09-Jul-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EADVQVAIHSDTLMEAGFLEDTVRAINGRVIHSFHVEGAGGGHAPDIMAMAGHPNVLPSS
                                                                                                                 HGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              59 SPDENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMODGVSPHMVVGVGTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         119 ALAGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   179 HRMLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EYDVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AHEVGSIEEGKFADLVLWEPKFFGVKADRVIKGGIIAYAQIGDPSÁSIPTPQPVMGRRMY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSN--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SSDSOAMGRAGEVIPRIMOTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEYIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMF
                                                                                                                                                                                                                                                                                                                                                                                                           urease (EC 3.5.1.5) 62K chain - Bacillus pasteurii
N.Alternate names: ureC protein
C.Species: Bacillus pasteurii
C.Species: Bacillus pasteurii
C.Accession: 547104
R.Moersdorf, G.; Weinmann, P.; Kaltwasser, H.
Rimoersdorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, P.; Kaltwasser, H.
R.Moerstorf, G.; Weinmann, H.
R.Moerstorf, G.; Weinmann, H.
R.Moerstorf, G.; Weinmann, H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A,Gene: urec
A,Start codon: GTG
A;Start codon: GTG
C;Superfamily: urease, alpha subunit; urease 62K chain homology
C;Keywords: heterodecamer; hydrolase; metalloprotein; nickel
F;3-552/Domain: urease 62K chain homology <U62>
F;3-552/Domain: urease 62K chain homology <U62>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 2; Length 569;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity 59.1%; Pred. No. 2e-127;
Matches 337; Conservative 112; Mismatches 118; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            63.0%; Score 1889.5;
                                                                                                                                                                                                                                                           240
                                                                                                                      481
                                                                                                                                                                                                                                  541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                  g
                                                                                                                   ò
                                                                                                                                                              g
                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Accession: AG2264

urease alpha chain [imported] - Nostoc sp. (strain PCC 7120)

C;Species: Nostoc sp. PCC 7120

A;Note: Nostoc sp. PCC 7120

A;Note: Nostoc sp. strain PCC 7120

A;Note: Nostoc sp. strain PCC 7120

C;Accession: AG2264

R;Kaneko, T:, Nakamura, Y:, Wolk, C.P.; Kuritz, T:; Sasamoto, S.; Watanabe, A.; Iriguchi
R;Kaneko, T:, Nakamura, Y:; Wolk, C.P.; Kuritz, T:; Sasamoto, S.; Watanabe, A.; Iriguchi
Nakazaki, N.; Shimpo, S:; Sugimoto, M.; Takazawa, M.; Yamada, M.; Yasuda, M.; Tabata, S

DNA Res. 8, 205-213, 2001

A;Title: Complete Genomic Sequence of the Filamentous Nitrogen-fixing Cyanobacterium Ana
A;Reference number: AB1807; MUID:21595285; PMID:11759840

A;Accession: AG2264

A;Accession: AG2264

A;Accession: AG2264

A;Accession: AG2264

A;Accession: AG2264

A;Cross-references: UNIPARC:UP100000CE887; GB:BA000019; PIDN:BAB75369.1; PID:g17132803;
A;Gene: alr3670

C;Superfamily: urease, alpha subunit; urease 62K chain homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         'n
                                                                                                                                                                                                                                                                                       HGKAKFDISITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPK 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DSQAMGRAGEVIPRIMQIADKNKKEFGKLPEDGKDNDNFRIKRYISKYINPALTHGVSE 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH 480
                                                                                                                                                                                                        -ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121 AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKMNLHR 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DVQVCIHIDIVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PTRPYTINTLEEHLDMLMVCHHLHRNIPEDVAFAESRIRRETIAAEDILHDLGAFSIISS 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           64 ADGAVDLVIINALILDWWGIVKADIGIKDGKIFKIGKAGNPYIQDHVD--IIIGPGTEAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DSQAMGRAGEVI PRTWQTADKNKKEFGKL PEDGKDNDNFRIKRYISKYTINPALTHGVSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 568;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                63.3%; Score 1897; DB 2; Length 5 61.4%; Pred. No. 5.8e-128; ive 95; Mismatches 120; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                        569
                                                                                                                                                                                                                                                                                                                                                                                                   TFEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                  349; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Local Similarity
Matches 349; Conserv
                                                                                                                         362
                                                                                                                                                                                                                                  422
                                                                                                                                                                                                                                                                                                                                             482
                                                                                                                                                                                                                                                                                                                                                                                                   541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               242
                302
                                                                   361
                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
```

ò g 8 g 8 엄 õ g 8 a 8

frog

```
Cipacesion: C75586
R.White, O.; Eisen, J.A.; Heidelberg, J.F.; Hickey, E.K.; Peterson, J.D.; Dodson, R.J.; I. M.; Shen, M.; Vamathevan, J.J.; Lam, P.; McDonald, L.; Utterback, T.; Zalewski, C.; Maishevan, M.; Vamathevan, J.J.; Lam, P.; McDonald, L.; Utterback, T.; Zalewski, C.; Maisher, J.C.; Fraser, C.M.
Science 286, 1571-1577, 1999
A.Fitle: Genome sequence of the radioresistant bacterium Deinococcus radiodurans R1.
A.Reference number: A75250; MUID:20036896; PMID:10567266
A.Accession: C7586
A.Accession: C7586
A.Accession: C7586
A.Accession: C7586
A.Fatlus: preliminary
A.Residuss: 1-568 «WHI>
A.Gross-references: UNIPARC:UPIO0000C1687; GB:AE001863; GB:AE001825; NID:g6460670; PIDN::A;Genetics:
A.Fatlus: Paraminary
A.Fatlus: Paraminary
A.Fatlus: Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call and Call a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EALAGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWN 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301 STNPTMPFTVNT1HEHLDMLMVCHHLSPR1PEDVHFAESRIRPET1AAEDVLHDLGVFSM 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            C;Species: Deinococcus radiodurans
C;Date: 03.Dec-1999 #sequence_revision 03-Dec-1999 #text_change 05-Oct-2004
C;Accession: C75586
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        60 --PDENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             361 MSSDSQAMGRVGEVITRTWQAAHKMKVQRGPLAAPDGR-ADNFRARRYVAKYTINPAIAHG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                418 VSEYIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FGHHGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LHRMLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DEYDVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STTPTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   358 TSSDSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNS-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (EC 3.5.1.5) 62K chain - Haemophilus influenzae (strain Rd KW20)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Map position: 2
C;Superfamily: urease, alpha subunit; urease 62K chain homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                             - Deinococcus radiodurans (strain R1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 61.1%; Score 1832; DB 2; Best Local Similarity 59.0%; Pred. No. 2.7e-123; Matches 337; Conservative 100; Mismatches 128;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  538 DPKTFEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              urease, alpha subunit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               H64075
urease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         염
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                              urease alpha subunit PA4868 [imported] - Pseudomonas aeruginosa (strain PAO1)
C;Species: Pseudomonas aeruginosa
C;Species: Pseudomonas aeruginosa
C;Species: Pseudomonas aeruginosa
C;Accession: H8302.
C;Accession: H8303.
R;Stover, C.K.; Pham, X.Q.; Erwin, A.L.; Mizoguchi, S.D.; Warrener, P.; Hickey, M.J.; Brady, L.L.; Coulter, S.N.; Folger, K.R.; Kas, A.; Larbig, K.; Lim, J., Lory, S.; Olson, M.V
Nature 406, 959-964, 2000
A;Title: Complete genome sequence of Pseudomonas aeruginosa PAO1, an opportunistic pathon A;Reference number: A82950; MUID:20437337; PMID:10984043
A;Reference number: A82950; MUID:20437337; PMID:10984043
A;Reference number: A82950; MUID:20437337; PMID:10984043
A;Reference number: DAA
A;Residues: Dreliminary
A;Reterences: UNIPARC:UPI00000CSE4A; GB:AE004900; GB:AE004091; NID:g9951134; PIDN: A;Residues: 1-566 <STO>A;Cross-references: UNIPARC:UPI00000CSE4A; GB:AE004900; GB:AE004091; NID:g9951134; PIDN: A;Gene: ureC; PA4868
C;Superfamily: urease, alpha subunit; urease 62K chain homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      299 PTRPFTRNTIDEHLDMLMVCHHLDPALAEDVAFAESRIRRETIAAEDILHDLGAFSMISS 358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61 AAQVUDTVITNALILDHWGVVKADVGLKDGRIQAIGKAGNPDIQPGV--NIAIGAGTEVI 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSE 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421 YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPK 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL 120
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 566;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match 61.1%; Score 1832; DB 2; Length 5
Best Local Similarity 59.2%; Pred. No. 2.6e-123;
Matches 336; Conservative 88; Mismatches 142; Indels
                                                                                                                TFEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                 PKTFEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               359
                                                                                 539
                                                                                                                                   540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           481
                              480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         원
장
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g ,
                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                              ò
```

59 9

Gaps

9

419 477

417

297

357

Б

accessory

PID:

PIDN: AAA25151.1;

mut

and

(beta),

```
A)Description: catalyzes the hydrolysis of one molecule of urea to carbon dioxide and twa C)Superfamily: urease, alpha subunit; urease 62K chain homology
C;Superfamily: urease, alpha subunit; urease 62K chain homology
C;Seywords: heterotrimer; hydrolyse; metalloprotein; nickel
F;2-657/Product: urease 62K chain #status experimental <a href="MANT">MANT</a>
F;134,136,217,360/Binding site: nickel 2 (His, His, Lys, Asp) #status experimental
F;217,246,272/Binding site: nickel 1 (Lys, His, His) #status experimental
F;217,246,272/Binding site: nickel 1 (Lys, His, His) #status experimental
F;217,246,272/Binding site: sarbon dioxide (Lys) (consolent) (by urease activase) #status experimental
                                                                                                                                                                                                                                          A; Reference number: A65977; PDB: LRRA A; Contents: annotation; X-ray crystallography, 2.3 angstroms, residues 2-567
A; Contents: annotation; X-ray crystallography, 2.3 angstroms, residues 2-567
B; Jabri, E.; Carr, M. B.; Hausinger, R.P.; Karplus, P.A.
Science 266, 998-1004, 1995
A; Title: The crystal structure of urease from Klebsiella aerogenes.
A; Reference number: A56340; MUID: 95273988; PMID: 7754395
A; Contents: annotation; X-ray crystallography, 2.3 angstroms
B; Jabri, E.; Karplus, P.A.
B; Contents: A1616-10626, 1996
A; Title: Structures of the Klebsiella aerogenes urease apoenzyme and two active-site m A; Reference number: A58380; MUID: 96446054; PMID: 8718850
A; Contents: annotation; X-ray crystallography, 2.3 angstroms; active site mutagenesis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        63 NTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALAG 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKTF 542
    R;Mulrooney, S.B.; Hausinger, R.P.
J. Bacteriol. 172, 5837-5843, 1990
A;Title: Sequence of the Klebsiella aerogenes urease genes and evidence for A;Reference number: A36138; MUID:91008957; PMID:2211515
A;Accession: C36138
A;Molecule type: DNA
A;Residues: 1-567 <MUL>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Gene: ureC
C;Complex: trimer of heterotrimeric subunits consisting of 11K (gamma), 12K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRML
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTPT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QAMGRAGEVIPRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3 MKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Cross-references: UNIPARC:UP100001120E5; GB:M36068; NID:g149335; R;Jabri, E.; Karplus, P.A. submitted to the Brookhaven Protein Data Bank, June 1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 567;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                84; Mismatches 141;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               60.9%; Score 1825; DB 1; 59.9%; Pred. No. 8.4e-123;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity 59.9%
Matches 339; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C; Function:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
NiAlternate names: urease alpha chain
C;Species: Haemophilus influenzae
C;Date: 18-Mug-1995 #sequence_revision 18-Aug-1995 #text_change 09-Jul-2004
C;Accesion: H64075
C;Accesion: H64075
R;Fleischmann, R.D.; Adams, M.D.; White, O.; Clayton, R.A.; Kirkness, E.F.; Kerlavage, P. Gocayne, J.D.; Scott, J.; Shirley, R.; Liu, L.I.; Glodek, A.; Kalley, J.M.; Weidman, J.D.; Brandon, R.C.; Fine, L.D.; Fritchman, J.L.; Fuhrmann, J.L.; Geoghagen, N.S.M. Science 269, 496-512, 1995
A;Authors: Gnehm, C.L.; McDonald, L.A.; Small, K.V.; Fraser, C.M.; Smith, H.O.; Venter, A;Tefrence number: A64000; MUID:95350630; PMID:7542800
A;Accession: H64075
A;Accession: H64075
A;Accession: H64075
A;Accession: H64075
A;Accession: H64075
A;Accession: H64075
A;Cross-references: UNIPROT:P44391; UNIPARC:UPI0000137D6B; GB:U32736; GB:L42023; NID:915
C;Supperfamily: urease alpha subunit; urease 62K chain homology
C;Keywords: hydrolase; metalloprotein; nickel
F;5-555/Domain: urease 62K chain homology cute.
                                                                                                                                                                                                                                                                                                                                                                        NID:915
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 416
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            --PDENTLDLVITNAMIID-YTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVG 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TEALAGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKW 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     177 NIHRMIRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKIHEDWGTTPSAIDHCLSV 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SSTTPTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIA 356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GVSEYIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYRE 476
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    urease (EC 3.5.1.5) 62K chain [validated] - Klebsiella pneumoniae
N;Alternate names: urea amidohydrolase; urease alpha chain; urease chain C
C;Species: Klebsiella pneumoniae
C;Date: 30-Nov-1990 #sequence_revision 02-Dec-1994 #text_change 05-Oct-2004
C;Accession: C36138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STNPTRPFTKNTIDEHLDMLMVCHHLDKRVPEDVAFADSRIRPETIAAEDILHDMGVFS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ADEYDVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MTSSDSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MFGHHGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNS-
                                                                                                                                                                                                                                                                                                                                           A;Residues: 1-572 <TICR>
A;Cross-references: UNIPROT:P44391; UNIPARC:UPI0000137D6B; GB:U32736;
C;Superfamily: urease, alpha subunit; urease 62K chain homology
C;Keywords: hydrolase; metalloprotesin; nickel
F;5-555/Domain: urease 62K chain homology <UG2>
F;141,143,224,367/Binding site: nickel 2 (His, His, Lys, Asp) #status
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60.9%; Score 1826; DB 2; Length 572; 58.9%; Pred. No. 7.2e-123;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  93; Mismatches 136; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VDPKTFEVFVDGKLCTSKPTSOVPLAORYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity 58.9
Matches 337; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ብ ራ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          중 유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
```

242

241 302

182

181

121

63

5;

362

301

422

œ

ò

```
A; Description: catalyzes the hydrolysis of one molecule of urea to carbon dioxide and two C; Superfamily: urease, alpha subunit; urease 62K chain homology C; Keywords: heterotrimer; hydrolase; metalloprotein; nickel C; 4-550/Domain: urease 62K chain homology <U62>.
F; 14,136,217,360/Binding site: nickel 2 (His, His, Lys, Asp) #status predicted F; 217,246,272/Binding site: nickel 1 (Lys, His, His, His, predicted F; 217/Binding site: carbon dioxide (Lys) (covalent) (by urease activase) #status predict. F; 219,320/Active site: His #status predicted
                                                                                                                                                                                                                                                                                                          determination and comparison with
                                                                                                           urase (EC 3.5.1.5) 62K chain - Proteus mirabilis
NiAleznate names: urease alpha chain
Sipecies: Proteus mirabilis
C;Species: Proteus mirabilis
C;Species: Proteus mirabilis
C;Species: Date: 03. Mar-1993 #sequence_revision 02-Dec-1994 #text_change 05-Oct-2004
C;Accession: D43719
R;Jones, B.D.; Mobley, H.L.T.
J; Bacteriol. 111, 6414-6422, 1989
A;Title: Proteus mirabilis urease: nucleotide sequence determination and comparison with A;Reference number: A43719; MUID:90078080; PMID:2687233
A;Accession: D43719
A;Accession: D43719
A;Residues: 1-567 <2003>
A;Cross-references: UNIPROT:P17086; UNIPARC:UPI0000137D74; GB:M31834; NID:g150914; PIDN: C;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:
A;Genetics:

                                                                                                                                                                                                                                                                                                                                                                                                                                    PIDN:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (beta), and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTPT 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          303 IPYTINTVAEHLDMIMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSDS 362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEYI 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHHG 482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             483 KAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKTF 542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            64 ECVDVLITNAIILDYWGIVKADIGIKDGRIVGIGKAGNPDVQPNVD--IVIGPGTEVVAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRML
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        63 NTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      183 RAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3 MKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             5,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           60.5%; Score 1813; DB 1; Length 5
59.5%; Pred. No. 6.1e-122;
tive 91; Mismatches 136; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     543 EVFVDGKLCTSKPTSQVPLAQRYTFF 568
     ETYEVRADGELLTCEPATVLPMAORYFLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match 60.5%;
Best Local Similarity 59.5%;
Matches 337; Conservative
     542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   482
                                                                              14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                             þ
                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Reference number: S42601; MUID:94166766; PMID:8121412
A;Accession: S42607
A;Accession: S42607
A;Accession: S42607
A;Accession: S42607
A;Accession: S42607
A;Accession: S42607
A;Accession: S42607
A;Accession: DNA
A;Residues: 1-570 <MIK>A;Residues: 1-570 <MIK>A;Cross-references: UNIPROT:P42885; UNIPARC:UPI000016FFCB; GB:S69145; NID:G545795; PIDN:C;Genetics: A;Gene: ureC
C;Superfamily: urease, alpha subunit; urease 62K chain homology
C;Superfamily: urease e2K chain homology ckel
F;5-553/Domain: urease 62K chain homology ckel
F;5-553/Domain: urease 62K chain homology ckel
F;5-553/Domain: urease 62K chain nomology ckel
F;136,138,219,362/Binding site: nickel 2 (His, His, Lys, Asp) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                             and
                                                                                                                                                                                                                                                   urease (EC 3.5.1.5) - Rhizobium meliloti
C;Species: Rhizobium meliloti
C;Species: S.-Dec-1994 #sequence_revision 03-Aug-1995 #text_change 09-Jul-2004
C;Accession: S42607
R;Miksch, G; Arnold, W.; Lentzsch, P.; Priefer, U.B.; Puehler, A.
MOI. Genet. 242, 539-550, 1994
A;Title: A 4.6 kb DNA region of Rhizobium meliloti involved in determining urease
ing frames.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PIIPYINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSE 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          421 YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCR-NITKKDFKFNDKTAKITVDP 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            64 EGGAVDTVITNALILDHWGIVKADIGLKDGRIAAIGKAGNPDWQPGVT--IIVGPGTEVI 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKMNLHR 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             63
SARHHCRLTFLSQAAAANGVAERLNLRSALAVVKGCRTVQKADMVHNSLQPNITVDAQTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           E-NTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              570;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             95; Mismatches 130; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 1822; DB 2;
Pred. No. 1.4e-122;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KTFEVFVDGKLCTSKPTSQVPLAORYTFF 568
                                                                                                        || ||||:| ||:| || || EVRVDGELITSEPADVLPMAQRYFLF
                                                                              EVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60.8%;
59.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Local Similaria,
Matches 340; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            301
                            482
                                                                           543
                                                                                                                             542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    े
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
```

ઠે

08:20:42

```
542 IVKADGVPLVCEPATELPMAQRYFLF
                                                                     Search completed: November 28, 2005, Job time: 38.4836 secs
셤
                                                                                                              Substance names: urease alpha chain - Proteus vulgaris

N;Alternate names: urease alpha chain
C;Species: Proteus vulgaris
C;Species: Proteus vulgaris
C;Accession: S08480

R;Mocrsdorf, G; Kaltwasser, H.
FEMS Microbiol. Lett. 66, 67-74, 1991
A;Title: Cloning of the genes encoding urease from Proteus vulgaris and sequencing of the A;Reference number: S08478; MUID:92038908; PMID:1936938
A;Recession: S08480
A;Recession: S08478; MUID:92038908; PMID:1936938
A;Recession: S08480
A;Recession: S08478; MUID:92038908; PMID:1936938
A;Recession: S08480
A;Recession: S08478; MUID:92038908; PMID:1936938
A;Recession: S08480
A;Recession: S08480
A;Recession: S08478; MUID:92038908; PMID:1936938
A;Recession: S08480
A;Recession: S08480
A;Recession: S08480
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recession: Sold Miles
A;Recess
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRML 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTPT 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               303 IPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSDS 362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEYI 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHHG 482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKTF 542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3 MKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 567;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 94; Mismatches 137; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 1809; DB 1;
Pred. No. 1.2e-121;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EVFVDGKLCTSKPTSQVPLAQRYTFF 568
  542 IVKADGVPLVCEPATELPMAQRYFLF 567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60.3%;
58.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 60.3
Best Local Similarity 58.8
Matches 333; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          482
  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  B
S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
```

```
helicobacte
helicobacte
helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       helicobacte
bacillus sp
bacillus ha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                helicobacte
helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         geobacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           bacillus ce
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                pseudomonas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 pseudomonas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          synechococc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        anabaena sp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  synechococc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   synechocyst
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        burkholderi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           campylobact
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              burkholderi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   burkholderi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            azotobacter
                                                                                                                     2005, 07:57:42; Search time 218.186 Seconds (without alignments) 1836.687 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   bacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          bacillus
                                                                                                                                                                                                                                               1 MKMKKQEYVNTYGPTKGDKV.....KLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       05kym1 (052305 process) (052305 process) (052305 process) (052305 process) (05623 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) (056313 process) 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              08gh97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q7X3w5
P42823
P69997
P69996
Q964ey3
Q9afb1
Q84f75
Q8rnu6
Q93716
Q033716
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 09kg59
P77837
5.1.6
Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                            Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                  2166443 seqs, 705528306 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QBGH97_HELBI
Q773W5_HELPI
UREZ_HELPI
UREZ_HELPY
Q950Q5_HELPY
Q940Q5_HELPY
Q94RY3_HELPY
Q94RY3_HELPY
Q94RY5_HELPY
Q94RY6_HELPY
UREZ_HELPY
UREZ_HELPY
UREZ_HELPY
Q98RY6_HELPY
UREZ_HELPY
Q98RY6_GSGU
Q98RY6_GSGU
Q58RGS_9_BACHD
UREI_BACSU
Q58RGS_9_BACHD
UREI_BACSU
Q57RY7_GEOKA
Q57RY7_GEOKA
Q57RY7_GEOKA
Q57RY7_GEOKA
Q57RY7_GEOKA
Q67RY7_GEOKA
Q67RY7_GEOKA
Q67RY7_GEOKA
Q67RY7_GEOKA
Q67RY7_GEOKA
Q67RY7_GEOKA
Q67RY7_GEOKA
Q67RY7_GEOKA
Q67RY7_GEOKA
Q67RY7_GEOKA
Q67RY7_GEOKA
Q67RY7_GEOKA
Q67RY7_GEOKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  041NH4 9BURK
0733J6_BACC1
04ZN06_PSESY
087VP0_PSESM
9BDWV6_SYNEL
965FB23_GAMLA
065RB23_GAMLA
063RL3_BURPS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q8YQZO ANASP
Q4KJ10 PSEF5
Q4 IXD2 AZOVI
    version - 2005 (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                  sw model
                                                                                                                                                                                                                                                                                       BLOSUM62
Gapop 10.0 , Gapext 0.5
    GenCore (c) 1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1: uniprot_sprot:*
2: uniprot_trembl:*
                                                                               using
                                                                                                                                                                                                                                                                                                                                                                                                                                    Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               UniProt_05.80:*
                                                                                                                                                                                                          US-09-904-994B-3
2999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query
Match Length
                                                                                  - protein search,
                                                                                                                          November 28,
                       Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 667.2
666.1
667.2
667.1
664.3
664.1
663.8
663.8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63.6
63.3
63.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1919
1914
1914
1907
1900
1900
1897
1896
1898
1889
1889
1873
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2326
22301
2297
2297
2297
2297
2297
2298
2291
2281
2281
2281
2281
2016
3191
3191
3196
                                                                                                                                                                                                                               Perfect score:
                                                                                                                                                                                                                                                                                       Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score
                                                                                    OM protein
                                                                                                                                                                                                                                                                                                                                                       Searched:
                                                                                                                                                                                                                                                      Seguence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Result
```

```
ö
                                               silicibacte
rhizobium l
ralstonia s
pseudomonas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SHELDLVLTNALIVDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVCNNLCVGPATEALA 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                synechococc
bradyrhizob
                                                                                deinococcus
haemophilus
                                                                                                vibrio fisc
glycine max
prochloroco
                                alcaligenes
                                         prochloroco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GEGMIITAGGIDSHTHFLSPQQFPTALANGVITMFGGGTGPVDGTNATTITPGKWNLHRM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                  WUCLECTIDE SEQUENCE.
MEDLINE=22540228; PubMed=12652903; DOI=10.1080/1042517021000039230;
Zhu J., Teng C.H., Chang C.F., Chang C.D., Simpson K.W., Wei C.,
Zhu Feng C.H., Chang Y.F.;
"Cloning and characterization of a Helicobacter bizzozeronii urease gene cluster.";
DNA Seq. 13:31-331(2002).
BMBL; AR330621; AA015374.1; -; Genomic_DNA.
                                                                                                                                                                                                                                Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
NCBI_TaxID=56877;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
       Q7u3i3
087402
089402
089909
07v3v2
Q7v3v2
Q8rpy2
08rpy2
09xxt1
09huus
Q9ryj4
Q9ryj4
Q9ryj4
Q9ryj4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 569;
                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                         Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            77.6%; Score 2326; DB 2;
74.1%; Pred. No. 6.5e-151;
ive 75; Mismatches 72;
                                                                                       Q4QN09 HAE18
Q5E728 VIBF1
Q949H4 SOYBN
                                                                                                                                  ALIGNMENTS
                        BRAJA
                                         PROMM
SILPO
RHILV
RALSO
PSEAE
                                                                                 DEIRA
HAEI8
       Q7U3I3
O87402
Q89UG0
O30337
                                        07V3V2
05LSQ2
08RPY2
08XXT1
09HUUS
                                                                                                                                                                                         01-MAR-2003 (TrEMBLrel. 23,
01-MAR-2003 (TrEMBLrel. 23,
01-MAR-2004 (TrEMBLrel. 26,
                                                                                                                                                                                                                   Ureaве В.
Helicobacter bizzozeronii.
                                                                                                                                                                           QBGH97 HELBI PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Local Similarity 74.1
Matches 420; Conservative
1873.5
1865.5
1855.5
1853.5
1853.5
1843.5
1832
1832
1832
1832
1831
1831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                   08GH97
                                                                                                                                                           RESULT 1
Q8GH97_HE
 용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
```

```
HELHE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Name=ureB;
                                                                                                                                                                                                                                                           182
                                                                                                                                                                                                                                                                                                         183
                                                                                                                                                                                                                                                                                                                                                    242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STRAIN=2;
                                                                                                                                                                                                                                                                                                                                                                                                                                               302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              482
                                                                                                                셤
                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                    요
                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                             a
a
                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઢ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                     ò
                                                                                                                                                                8
                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                   361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                542
AEGLIVTAGGIDTHIHFISPQQIPTAFASGITTMIGGGTGPADGTNATTITPGRWNLKTM 182
                                                                     301
                                                                                                                                                                   243 VQVAIHTDTLNEAGCVEDTLQAIAGRTIHTFHTEGAGGGHAPDVIKMSGEFNILPASTNP 302
                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                            422
                                                                                                                                                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GKAKFDTSITFVSKVAYENGVKEKLGLERQVL,PVKNCRNITKKDFKFNDKTAKITVDPKT 541
                                                                                                                                                                                                                                 TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                         IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                             KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFCAGKTIREGMGQSNSPD
                                               LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                        VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                            SQAMGRAGEVI PRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Helicobacter pylori (Campylobacter pylori).Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              75; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (1) —
NUCLEOTIDE SEQUENCE.
NUCLEOTIDE SEQUENCE.
STRAIN=MEL-HP27;
Duan G.C., Dai L.P.;
Submitted (MAY-2003) to the EMBL/GenBank/DDBJ databases.
EMBL; AR295085; ARFS1176.1; -; Genomic_DNA.
HSSP; P14917; 1E9Y.
GO: GO:0016787; F:hydrolase activity; IEA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GO; GO: 0016151; F: inckel ion binding; IEA.
GO; GO: 00016151; F: inckel ion binding; IEA.
GO; GO: 00016151; F: inckel ion binding; IEA.
GO; GO: 00008001; F: urease activity; IEA.
IGO: GO: 00008001; F: introgen compound metabolism; IEA.
InterPro; IPR006809; Amidohydro 1.
InterPro; IPR006809; Urease alpha.
InterPro; IPR011612; Urease alpha.
InterPro; IPR011612; Urease alpha.
Ffam; PF0149; Amidohydro 1; 1.
Refam; PF00449; Urease alpha; 1.
Refam; PF00449; Urease alpha; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRINTS; PRO1752; UREASE. TIGRPAMS; TIGRPAMS; TIGRO1792; urease_alph; 1. PROS1TE; PSO1120; UREASE_1; 1. PROS1TE; PSO10145; UREASE_2; 1. SEQUENCE 569 AA; 61670 MW; 4C96852826C7A784 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                76.7%; Score 2301; DB 2; 73.5%; Pred. No. 3.4e-149;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           75; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    YKVKVDGKEVTSKAADKISLAQLYNLF 569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (TrEMBLrel. 25, (TrEMBLrel. 25, (TrEMBLrel. 26,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Best Local Similarity 73.5
Matches 417; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         HELPY PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-OCT-2003
01-OCT-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-MAR-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      543
                                                                                                                                        242
                                                                                                                                                                                                                                                                                                                          362
                                                                                                                                                                                                                                                                                                                                                                                                                     422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                482
                                                                                                                                                                                                                                   302
                                                                                                                                                                                                                                                                              303
                                                                                                                                                                                                                                                                                                                                                                       363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Urease B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q7X3W5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 2 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS) 1 (27.3 WS)
                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                   g
                                                                                                                       ò
                                                                                                                                                                          임
                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                8
                                             ð
```

```
This Swiss-Prot entry is copyright. It is produced through a collaboration between the Swiss Institute of Bloinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     542
                                                              121
                                                                                                                                                                                          182
                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                           302
                                                                                                                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                                                                                                           362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            541
                       62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Solnick J.V., O'Rourke J., Lee A., Tompkins L.S.;
"Molecular analysis of urease genes from a newly identified uncultured
"Species of Helicobacter.";
Infect. Immun. 62:1631-1638(1994).
122 GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM
                                                                                                                                                                         123 GEGLIVTAGGIDTHIHFISPQOIPTAFASGVTTMIGGGTGPADGTNATTITPGRRNLKWM
                                                                                                                                                                                                                                                         243 VQVAIHTDTLNEAGCVEDTWAAIAGRTMHTFHTEGAGGGHAPDIIKVAGEHNILPASTNP
                                                                                                                                                                                                                                                                                                                                                                                                                            TIPFTVNTEAEHMDMLMVCHHLDKSIKEDVQFADSRIRPQTIAAEDTLHDMGIFSITSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             363 SQAMGRVGEVITRTWQTADKNKKEFGRLKEEKGDNDNFRIKRYLSKYTINPAIAHGISEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LRAABEYSMINGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                    VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                      TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GKAKFDTS1TFVSKVAYENGVKEKLGLERQVLPVKNCRN1TKKDFKFNDKTAK1TVDPKT
                                                                 62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bacteria, Proteobacteria, Epsilonproteobacteria, Campylobacterales,
Helicobacteraceae, Helicobacter,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Infect. Immun. 62:1631-1638(1994).

-!- CAFALYTIC ACTIVITY: Urea + H(2)O = CO(2) + 2 NH(3).

-!- COFACTOR: Binds 2 nickel ions per subunit (By similarity).

-!- SUBUNIT: Consists of two subunits (alpha and beta).

-!- FTM: Lys-219 is carbamylated. The carbamoyl group provides the ligands for the two nickel ions (By similarity).

-!- SIMILARITY: Belongs to the urease family.

-!- CAUTION: In Helicobacter the beta subunit is what is known in other bacteria as the alpha subunit.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-NCV-1995 (Rel. 32, Created)
01-NCV-1995 (Rel. 32, Last sequence update)
13-SEP-2005 (Rel. 48, Last annotation update)
Urease beta subunit (EC 3.5.1.5) (Grea amidohydrolase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              568 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    : |||||| |||| :: | ||| :: |
543 YHVFVDGKEVTSKPATKVSLAQLFSIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUCLEOTIDE SEQUENCE [GENOMIC DNA].
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=9422523; PubMed=8168924;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Helicobacter heilmannii.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=35817;
```

```
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                      removed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       METAL
         not
                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                              182
                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                      242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  243 VQVAIHTDTLNEAGCVEDTLEAIAGRTIHTFHTEGAGGGHAPDVIKMAGEFNILPASTNP 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            303 IIPFTKNTEAEHMDMLM-CHHLDKNIKEDVEFADSRIRPQTIAAEDKLHDMGIFSITSSD 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                                                                62
                                                                                                                                                                                                                                                                                                               61
as long as its content is in no way modified and this statement is
                                                                                                                                                                                                                                                                                                                                                                                                                                            122 GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM
                                                                                                                                                                                                                                                                                                                                                                                                      123 AEGLIVTAGGIDTHIHFISPQQIPTAFASGITTMIGGGTGPADGTWATTITPGRWNLKEM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  362 SQAMGRVGEVITRIMQTADKNKKEFGRLPEEKGDNDNPRIKRYISKYTINPALTHGISEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                     62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LRAABEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                          1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VOVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNI
                                                                                                                                                                                                                                                                       Length 568;
                                                                                                                                                                   Proton donor (By similarity).
Nickel 2 (By similarity).
Nickel 2 (By similarity).
Nickel 1 and 2 (By similarity).
Nickel 1 (By similarity).
Nickel 1 (By similarity).
Nickel 2 (By similarity).
Nickel 2 (By similarity).
Substrate (By similarity).
Substrate (By similarity).
Substrate (By similarity).
W; E2C036DF30377917 CRC64;
                                                                                                                                                                                                                                                                    76.6%; Score 2298.5; DB 1; Length 73.7%; Pred. No. 5e-149; ive 74; Mismatches 74; Indels
                                             InterPro; IPR006680; Amidohydro 1.
InterPro; IPR005848; Urease alpha.
InterPro; IPR001612; Urease alpha.
InterPro; IPR0011612; Urease alpha N.
InterPro; IPR008295; Urease alpha In-
Pfam; PF01979; Amidohydro 1; 1.
Pfam; PF01979; Amidohydro 1; 1.
Pfam; PF01979; Urease alpha; 1.
PRNST; PR0175; UREASE.
TIGRAMs; TIGR0179; UREASE.
TIGRAMS; TIGR0179; UREASE 1; 1.
PROSITE; PS00145; UREASE 1; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               568
                            EMBL; L25079; AAA65723.1; -; Genomic_DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              542 YKVKVDGNEVTSHAADKLSLAQLYNLF
                                                                                                                                                         Hydrolase, Metal-binding, Nickel.
ACT_SITE 321 321 Prot
                                                                                                                                                                                                                                                   61870 MW;
                                                                                                                                                                                                                                                                                Local Similarity 73.7
nes 418; Conservative
                                                                                                                                                                              136
138
219
248
                                        HSSP; P14917; 1E9Z.
                                                                                                                                                                                                                                                     Ä
                                                                                                                                                                                                                                                   568
                                                                                                                                                                                                                                                                                                                                                                                                                                   182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     482
                                                                                                                                                                                                                                                  SEQUENCE
                                                                                                                                                                                                                                                                        Query Match
            removed
                                                                                                                                                                                                                                         BINDING
                                                                                                                                                                                        METAL
METAL
METAL
METAL
METAL
                                                                                                                                                                               METĀL
 ò
                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                    유
                                                                                                                                                                                                                                                                                                                                                                                       ó
                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
```

```
This Swiss-Prot entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use as long as its content is in no way modified and this statement is not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                        NUCLEOTIDE SEQUENCE [LARGE SCALE GENOMIC DNA].
MEDLINE=99120557; PubMed=9923682; DOI=10.1038/16495;
Alm R.A., Ling L.-S.L., Moir D.T., King B.L., Brown E.D., Doig P.C.,
Smith D.R., Noonan B., Guild B.C., Garge B.L., Carmel G.,
Tummino P.J., Caruso A., Uria-Nickelsen M., Mills D.M., Ives C.,
Gibson R., Merberg D., Mills S.D., Jiang Q., Taylor D.E., Vovis G.F.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "Genomic sequence comparison of two unrelated isolates of the human gastric pathogen Helicobacter pylori."; Nature 397:176-180(1999).
                                                                                                                                                                                           Helicobacter pylori 199 (Campylobacter pylori 199).
Bacteria, Proteobacteria, Epsilonproteobacteria, Campylobacterales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 similarity).

PTM: Lys-219 is carbamylated. The carbamoyl group provides the ligands for the two nickel ions (By similarity).

MISCELLANEOUS: Oligomerization may protect the enzyme against denaturation in an acidic environment (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -!-- CATALYTIC ACTIVITY: Urea + H(2)O = CO(2) + 2 NH(3).
-!-- COFACTOR: Binds 2 nickel ions per subunit (By similarity).
-!-- SUBUNIT: Heterohexamer of 3 alpha and 3 beta subunits. Four heterohexamers assemble to form a 16 nm spherical complex (By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SIMILARITY: Belongs to the urease family. CAUTION: In Helicobacter the beta subunit is what is known in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Proton donor (By similarity).
Nickel 2 (By similarity).
Nickel 2 (By similarity).
Nickel 1 and 2 (By similarity).
Nickel 1 (By similarity).
Nickel 1 (By similarity).
Nickel 1 (By similarity).
Nickel 2 (By similarity).
Substrate (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 569;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                      01-MAY-1992 (Rel. 22, Last sequence update)
10-MAY-2005 (Rel. 47, Last annotation update)
Urease beta subunit (EC 3.5.1.5) (Urea amidohydrolase).
Name-ureB; Synonyms-hpuB; OrderedLocusNames-JHP0067;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4C8A6BC6C8295584 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Hydrolase, Metal-binding, Nickel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           76.6%; Score 2297; DB 1; 73.4%; Pred. No. 6.3e-149; ive 76; Mismatches 75;
   569 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL; AE001446; AAD05651.1; -; Genomic_DNA
PIR; B38537; URKCBP.
InterPro; IPR006680; Amidohydro_1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   other bacteria as the alpha subunit.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pfam; PF01979; Amidohydro 1. Ureace alphalune.
Pfam; PF01979; Amidohydro 1. 1.
Pfam; PF00449; Urease_alpha; 1.
PRSF; PIRSF001226; Urease_alpha; 1.
PRINTS; PR01752; UREASE.
TIGRAPAM; TIGR01792; urease_alph; 1.
PROSITE; PS01120; UREASE 1; 1.
PROSITE; PS01120; UREASE 1; 1.
Complete proteome; Hydrolase; Metal-bir ACT_SITE 322 Proton dor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro; IPR005648; Urease alpha.
InterPro; IPR011612; Urease_alpha N.
InterPro; IPR008295; Urease_alphaIone.
Pfam; PF01979; Amidohydro 1; 1.
Pfam; PF00449; Urease_alpha; 1.
URE2 HELPJ STANDARD;
P69997; P14917;
01-APR-1990 (Rel. 14, Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61684 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        136
138
219
248
274
362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      362
221
569 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local Similarity
nes 416; Conser
                                                                                                                                                                                                                                                                                                          NCBI_TaxID=85963;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Trust T.J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
```

ö

RESULT

```
STRAIN=85P;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               urease.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Hď
                                                                           pylori.
                                                                                                                                                                                                                                                                          pylori.
                                                                                                                                                                                                          pylori
243 VQVAIHTDTLNEAGCVEDTMAAIAGRTWHTFHTEGAGGGHAPDIIKVAGEHNILPASTNP 302
                                                                                                                                                            361
                                                                                                                                                                     422
                                                                                                                                                                                                                                      481
                                                                                                                                                                                                                                               542
                 241
                                                                                            SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY 421
                                                                                                                                                                                                                                                                          541
         121
                                              181
                                                                                                                       VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITWAGELNILPSSTTP 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Labigne A., Cussac V., Courcour, Control P.; "Shuttle cloning and nucleotide sequences of Helicobacter pylori genes responsible for urease activity."; "A. Bacteriol. 173:1920-1931(1991).
        ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                              GEGMI ITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM
                                                                                  LRAABEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                           TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                           SQAMGRVGEVITRTWQTADKNKKEFGRLKEEKGDNDNFRIKRYLSKYTINPAIAHGISEY
                                                                                                                                                                                                                                     IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                          GKAKFDTSITFVSKVAYENGVKEKLGLEROVLPVKNCRNITKKDFKFNDKTAK1TVDPKT
                                                                                                                                                                                                                                                                                    P69956; P14917; QPR3B3; 01-ARR-1990 (Rel. 14, Created) 01-MAY-1992 (Rel. 22, Last sequence update) 01-MAY-2005 (Rel. 24, Last annotation update) Urease beta subunit (BC 3.5.1.5) (Urea amidohydrolase). Name-arres; Synonyma-lpulB, OrderedLocusNames-HP0072; Helicobacter pylori (Campylobacter pylori). Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Clayton C.L., Pailen M.J., Kleanthous H., Wren B.W., Tabaqchali S., "Nucleotide sequence of two genes from Helicobacter pylori encoding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      [3]
NUCLECTIDE SEQUENCE [LARGE SCALE GENOMIC DNA].
NUCLECTIDE SEQUENCE [LARGE SCALE GENOMIC DNA].
MEDIANE=97394467; PubMed=9252185; DOI=10.1038/41483;
Tomb J.-F., White O., Kerlavage A.R., Clayton R.A., Sutton G.G.,
Fleischmann R.D., Ketchum K.A., Klenk H.-P., Gill S.R.,
                                                                                                                                                                                                                                                                                                                                                                                 569 AA
                                                                                                                                                                                                                                                                                                               FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                          : ||||| |||| :: | ||| :: |
543 YHVFVDGKEVTSKPANKVSLAQLFSIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Nucleic Acids Res. 18:362-362(1990)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=90221820; PubMed=2326167;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=91161505; PubMed=2001995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Helicobacteraceae; Helicobacter.
NCBI_TaxID=210;
                                                                                                                                                                                                                                                                                                                                                                                 STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      for urease subunits.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUCLEOTIDE SEQUENCE.
STRAIN=85P;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRAIN=CPM630
                                                                                                                                                                                                                                                                                                                                                                                 HELPY
                                                              123
                                                                                                                       242
                                                                                                                                                           302
                                                                                                                                                                              303
                                                                                                                                                                                               362
                                                                                                                                                                                                                                     422
                                                                                                                                                                                                                                                      423
                                                                                                                                                                                                                                                                                            483
                                                                                                                                                                                                                                                                                                              542
                           63
                                              122
                                                                                 182
                                                                                                    183
                                                                                                                                                                                                                  363
                                                                                                                                                                                                                                                                         482
        62
                                                                                                                                                                                                                                                                                                                                                            RESULT
URE2_HE
                                                                                                                                                                                                                                                                                                                                                                                q
                                                         g
                                                                                               g
                                                                                                                                     В
                                                                                                                                                                         g
                                                                                                                                                                                         ò
                                                                                                                                                                                                              g
                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                             엄
        ò
                                            õ
                                                                                ò
                                                                                                                  ò
                                                                                                                                                         ò
```

```
This Swiss-Prot entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                    PROTEIN SEQUENCE OF 1-30, AND KINETIC PARAMETERS.
Pubmed=1887197; DOI=10.1016/0882-4010(91)90062-F;
Evans D.J. Jr., Evans D.C., Kirkpatrick S.S., Graham D.Y.,
"Characterization of the Helicobacter pylori urease and purification
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS), AND SUBUNIT STRUCTURE. PubMed=11373617; DOI=10.1038/88563; Ha N.-C., Oh S.-T., Sung J.Y., Cha K.A., Lee M.H., Oh B.-H.; Supramolecular assembly and acid resistance of Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     genes in Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Optimum PH is 8.0. Active from pH 4.0 to 10.0;

-1- SUBUNIT: Heterohexamer of 3 alpha and 3 beta subunits. Four heterohexamers assemble to form a 16 nm spherical complex.

-1- FTM: Lys-219 is carbamylated. The carbamoyl group provides the ligands for the two nickel ions (By similarity).

-1- MISCELLANEOUS: Oligomerization may protect the enzyme against enautation in an acidic environment.

-1- SIMILARITY: Belongs to the urease family.

-1- CAUTION: In Helicobacter the beta subunit is what is known in other bacteria as the alpha subunit.
Dougherty B.A., Nelson K.E., Quackenbush J., Zhou L., Kirkness E.F. Peterson S.N., Loftus B.J., Richardson D.L., Dodson R.J., Khalak H. Glodek A., McKehney K., FitzGerald L.M., Lee N., Adams M.D., Hickey B.K., Berg D.E., Gocayne J.D., Utterback T.R., Peterson J.D. Kelley J.M., Cotton M.D., Weidman J.F., Fujii C., Bowman C., Watthey L., Wallin E., Hayes W.S., Borodovsky M., Karp P.D., Smith H.O., Praser C.M., Venter J.C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Hu L.T., Mobley H.L.T.; "Purification and N-terminal analysis of urease from Helicobacter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE-30264448; PubMed-2188975; Dunn B.E., Campbell G.P., Perez-Perez G.I., Blaser M.J.; "Purification and characterization of urease from Helicobacter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Turbett G.R., Hoej P.B., Horne R., Mee B.J.; "Purification and characterization of the urease enzymes of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        = CO(2) + 2 NH(3).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Helicobacter species from humans and animals.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -i- CATALYTIC ACTIVITY: Urea + H(2)O = CO(2) +
-i- COFACTOR: Binds 2 nickel ions per subunit.
-i- BIOPHYSICOCHEMICAL PROPERTIES:
Kinetic parameters:
Kinetic parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Cussac V., Ferrero R.L., Labigne A.;
"Expression of Helicobacter pylori urease ge
grown under nitrogen-limiting conditions.";
Bacteriol. 174:2466-2473(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Biol. Chem. 265:9464-9469(1990)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Struct. Biol. 8:505-509(2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PROTEIN SEQUENCE OF 1-15.
MEDLINE=90202165; PubMed=2318539;
Hu L.T., Mobley H.L.T.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60:5259-5266(1992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE=92210488; PubMed=1313413;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     nfect. Immun. 58:992-998(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Microb. Pathog. 10:15-26(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUCLEOTIDE SEQUENCE OF 565-569.
                                                                                                                                                                                                                                                                                                                                                                      Nature 388:539-547(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PROTEIN SEQUENCE OF 1-20.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PROTEIN SEQUENCE OF 1-12.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN=NCTC 11637;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  dependence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             its subunits.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Infect. Immun.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PubMed=1452359
```

```
243 VQVAIHTDTLNEAGCVEDTWAAIAGRTWHTFHTEGAGGGAAPDIIKVAGEHNILPASTNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GEGMI ITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOAMGRAGEVIPRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GKAKFDISITEVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                            Length 569;
                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                           76.6%; Score 2297; DB 1;
ilarity 73.4%; Pred. No. 6.3e-149;
Conservative 76; Mismatches 75;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Created)
Last sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        : |||||| |||| ||| :: | ||| :: |
YHVFVDGKEVTSKPANKVSLAQLFSIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 6
09S005 HELPY
ID Q5S005 HELPY PRELIMINARY;
AC Q9S005;
DT 01-MAY-2000 (TrEMBLrel. 13,
DT 01-MAY-2000 (TrEMBLrel. 13,
  Similarity
  Local Simi
hes 416;
                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                        62
                                                                                                                                                                                                                                                                                                                                                                                                                                                  63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             483
STRAND
TURN
HELLIX
TURN
STRAND
HELLIX
TURN
STRAND
HELLIX
TURN
STRAND
HELLIX
TURN
STRAND
HELLIX
TURN
STRAND
HELLIX
TURN
STRAND
HELLIX
TURN
STRAND
HELLIX
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
STRAND
TURN
                                                                                                                                                                                                                                                                                                                                      Matches
  g
                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                             d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                   ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                | Reference | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia | Microbia
  European Bioinformatics Institute. There are no restrictions on as long as its content is in no way modified and this statement is
                               removed.
```

422

481

421

361

542

ö

```
STRAIN=Y06;
PubMed=15052678;
                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=210;
                                                                                                                                                                                                                                                                                                                               Name=ureB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         303
                          542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 243
                                                                                                                                                                                                             Q64EY3;
                                                                                                                                                                  264EY3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    원
                                                              g
                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                            ઢ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        123 GEGLIVTAGGIDTHIHFISPQOIPTAPASGVTTMIGGGTGPADGTNATTITPGRRNLKWM 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      243 VQVAIHTDTLNEAGCVEDTWAAIAGRTWHTFHTBGAGGGHAPDIIKVAGEHNILPASTNP 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTF 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      302 TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SQAMGRAGEVIPRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         422 IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVPSEMGDSNASVPTPQPVYYREMFGHH 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3 KISRKEYVSMYGPTTGDKVRLGDTDLIAEVEHDYTIYGEELKFGGGGKTLREGMSQSNNPS 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   182 LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        KWKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                MEDLINE=20305050; PubMed=10844692; Akada M., Nakazawa T., Akada J.K., Shirah M., Takeuchi H., Tsuda M., Nakazawa T., Ialdentification of the urease operon in Helicobacter pylori and its control by mRNA decay in response to pH."; Mol. Microbiol. 36:1071-1084(2000). EMBL; ABA02429; BAA84533.1; -; Genomic_DNA.
                                                                  Helicobacter pylori (Campylobacter pylori).
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 569;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           76.6%; Score 2297; DB 2; Length 5 73.4%; Pred. No. 6.3e-149; ive 76; Mismatches 75; Indels
                                                                                                                                                                                                                                                                                                                                                                                        GO; GO:0016787; F:hydrolase activity; IEA.
GO; GO:0016151; F:nickel ion binding; IEA.
GO; GO:0009019; F:urease activity; IEA.
GO; GO:0009019; F:urease activity; IEA.
GO; GO:0009019; F:urease activity; IEA.
InterPro; IPR00680; Amidohydro 1.
InterPro; IPR008295; Urease alpha.
InterPro; IPR008295; Urease alpha.
Pfam; PF01979; Amidohydro 1; 1.
Pfam; PF01979; Amidohydro 1; 1.
Pfam; PF01979; Amidohydro 1; 1.
Pfam; PF01979; Amidohydro 1; 1.
Pfam; PF01979; Amidohydro 1; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRINTS; PR01752; UREASE.
TIGRPAMS; TIGR01792; urease_alph; 1.
PROSITE; PS01120; UREASE_1; 1.
PROSITE; PS010145; UREASE_2; 1.
SEQUENCE 569 AA; 61670 MW; 4C8A6BDA3A295584 CRC64;
  01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Local Similarity 73.4%
Matches 416; Conservative
                                                                                                                                                                                     NUCLEOTIDE SEQUENCE
                                                                                                                                          NCBI_TaxID=210;
                                                                                                                                                                                                        STRAIN=HPK5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              363
DDA RATTANA OCCOON ON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON OCCOON O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ∂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
```

ઠે

Š

```
63 NTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALAG 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           62 EELDLIITWALIVDYTGIYKADIGIKDGKIAGIGKGGNKDMQDGVKNNLSVGPATEALAG 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRML 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          242 QVAIHTDTLNEAGCVEDTWAAIAGRTWHTFHTEGAGGGHAPDIIKVAGEHNILPASTNPT 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEYI 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2 ISRKEYVSMYGPTTGDKVRLGDTDLIAEVEHDYTIYGEELKFGGGKTLREGMSQSNNPSK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RAABEYSMNLGFLAKGNTSNDASLADOIBAGAIGFKIHEDWGTTPSAINHALDVADKYDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QVCIHTDTVNEAGYVDDTLNAMNGRALHAYHIEGAGGGHSPDVITMAGELNILPSSTTPT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3 MKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                           Helicobacter pylori (Campylobacter pylori).
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mao Y.F., Yan J.;
"Construction of prokaryotic expression system of ureB gene from
clinical Helicobacter pylori strain and identification of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 567;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITICAL TELECOACHE PYTOLI SULAIN AND LUCULINGALION OF recombinant protein immunity."

World J. Gastroenterol. 10:977-984 (2004).

EMBL; AY714224; AAU21200.1; -; Genomic DNA.

GO; GO:0016787; F:hydrolase activity; IEA.

GO; GO:0016797; F:nickel ion binding; IEA.

GO; GO:001639; F:urease activity; IEA.

GO; GO:000807; P:nitrogen compound metabolism; IEA.

InterPro; IPR005848; Urease alpha.

InterPro; IPR005848; Urease alpha.

InterPro; IPR011612; Urease alpha.

InterPro; IPR011612; Urease alpha.

InterPro; IPR01192; Urease alpha.

ITGRFAMS; PR01752; UREASE

ITGRFAMS; TIGR01782; urease alph; 1.

PROSITE; PS01120; UREASE 1; 1.

PROSITE; PS01120; UREASE 1; 1.

PROSITE; PS01120; UREASE 2; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                    Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           76.4%; Score 2292; DB 2; 73.3%; Pred. No. 1.4e-148; iive 76; Mismatches 75;
                                                                                                                                                                                               567 AA
                             FEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                       Created)
                                                                                                                                                                                                                                                 25-OCT-2004 (TrEMBLrel. 28, 25-OCT-2004 (TrEMBLrel. 28, 25-OCT-2004 (TrEMBLrel. 28,
                                                                                                                                                                                            Q64EY3_HELPY PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUCLEOTIDE SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity
Matches 415; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
```

421

482 541 542

481

g 8 a y

a δ 유

```
ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                           3 KISRKEYVSMYGPTTGDKVRLGDTDLIAEVEHDYTIYGEELKFGGGKTLREGMSQSNNPS
243 VQVAIHTDTLNEAGCVEDTMAAIAGRTMHTFHTEGAGGGHAPDIIKVAGEHNILPASTNP
                                                            TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                    362 SQAMGRAGEVIPRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                   363 SQAMGRVGEVITRIWQTADKNKKEFGRLKEEKGDNDNFRIKRYLSKYTINPAIAHGISEY
                                                                                                                                                                                                                                                                                                                                                                                                                                482 GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                             422 IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Helicobacter pylori (Campylobacter pylori).
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       77; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRAIN=Iran-HP031;
Karimi Arzenani M., Mohammadi M.;
Submitted (JAN-2003) to the EMBL/GenBank/DDBJ databases.
EMBL; AY227442; AA034403.1; -; Genomic_DNA.
HSSP; P14917; 1E9Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               569 AA; 61697 MW; D35279ED45EF712F CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MOST, FILT.

GO, GO:0016151; F:hydrolase activity; IEA.

GO; GO:0016151; F:nickel ion binding; IEA.

GO; GO:0009039; F:urease activity; IEA.

GO; GO:0006807; P:nitrogen compound metabolism; IEA.

INTERPRO; IPR006680; Amidohydro_1.

INTERPRO; IPR006898; Urease alpha.

InterPro; IPR0180181; Urease alpha.

PF01979; Amidohydro_1; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-JUN-2003 (TIEMBLrel. 24, Created)
01-JUN-2003 (TIEMBLrel. 24, Last sequence update)
1-JUNAR-2004 (TIEMBLrel. 26, Last annotation update)
Urease beta (EC 3.5.1.5).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           76.3%; Score 2288; DB 2; 73.2%; Pred. No. 2.6e-148; ive 75; Mismatches 77;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              : |||||| || || || || :: | || || :: |
YHVFVDGKEVTSKPANKVSLAQLFSIF 569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pfam; PF01979; Amidohydro 1; 1.
Pfam; PF00449; Urease_alpha; 1.
PIRSF; PIRSF001226; Urease_alpha; 1.
PRINTS; PR01752; UREASE.
TIGRFAMS; TIGRO1792; urease_alph; 1.
PROSITE; PS01120; UREASE 1; 1.
PROSITE; PS01145; UREASE 2; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q84F75 HELPY PRELIMINARY;
Q84F75;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NCBI_TaxID=210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-JUN-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local Simi
nes 415;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hydrolase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Name=ureB
                                                               302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g &
                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                    ∂
                                                                                                                                                                                                                                                                                                            ⋧
                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                      KAKFDISITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKTF 542
                                                                                                                                                                                                                                                      123 GEGLIVTAGGIDTHIHPISPQQIPTAFASGVTTMIGGGTGPADGTNATTITPGRRNLKWM 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              242
GSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHHG 482
                                                                                                                                 62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  182 LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGGSPDVITWAGELNILPSSTTP 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     183 LRAAEEYSMNLSFLAKGNASNDASLADQIEAGAIGFKIHEDWGTTPSAINHALDVADKYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Urease B.
Helicobacter pylori (Campylobacter pylori).
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 569;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GO: GO: 001678; F: hydrolase activity; IEA.
GO: GO: 00151; F: nickel ion binding; IEA.
GO: GO: 0009039; F: urease activity; IEA.
GO: GO: 00008039; F: urease activity; IEA.
GO: GO: 0006807; F: nitrogen compound metabolism; IEA.
InterPro; IPR006880; Amidohydrol.
InterPro; IPR006889; Urease alpha.
InterPro; IPR008895; Urease alpha.
InterPro; IPR011612; Urease alpha.
InterPro; IPR010612; Urease alpha.
InterPro; IPR010226; Urease alpha.
InterPro; IPR010226; Urease alpha.
INTS; PR01752; UREASE.
ITGRFAMS; TIGR01792; urease alph; 1.
PROSITE; PS01120; UREASE.
ITGRFAM9; TIGR01792; urease alph; 1.
PROSITE; PS01120; UREASE.
ITGRFAM9; TIGR01792; urease alph; 1.
PROSITE; PS01120; UREASE.
ITGRFAM9; TIGR01792; urease alph; 1.
PROSITE; PS01120; UREASE.
ITGRFAM9; TIGR01792; UREASE.
ITGRFAM9; TIGR01792; UREASE.
ITGRFAM9; TIGR01792; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; TIGR01793; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM9; UREASE.
ITGRFAM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 76; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gerold A., Simpson K., Chang Y.-F.;
Submitted (FEB-2001) to the EMBL/GenBank/DDBJ databases.
EMBL, AF352376; AAK32714.1; -; Genomic_DNA.
HSSP; P14917; 1E9Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-JUN-2001 (TrEMBLrel. 17, Created)
01-JUN-2001 (TrEMBLrel. 17, Last sequence update)
01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  76.4%; Score 2291; DB 2; 73.2%; Pred. No. 1.6e-148; ive 76; Mismatches 76;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  569 AA
                                                                                                                                                                                                                                                                                                                                                 543 EVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                              Q9AFB1 HELPY PRELIMINARY;
Q9AFB1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches 415; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           [1]
NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=210;
                                                                                                                                                                                                                                                                                  482
                                                                                                                                                          422
                                                                                                                                                                                                                      483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          122
                                                                                              423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONT
```

ö

ઠે 셤 ઠે В ò В ઠે 셤 ò

ö

121

62 61

182 241

g

ò

8 8

g

ò

g

ò

ઠે

g ò 엄 ò 셤

```
GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TIPYTINTVAEHLDMLMTCHHLDKRIREDLOFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  303 TIPFTYNTEAEHMDMLMYCHHLDKSIKEDVQFADSRIRPQTIAAEDTLHDMGIFSITSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2 KMKKQBYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITWAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SQAMGRAGEVIPRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                  ;
0
                                                                                                                                                                                                                                                                                                                                            Length 559;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 11
URE2 HELFE
ID 0721
OR126; OSR3B3;
DT 01-OCT-1994 (Rel. 30, Created)
DT 01-OCT-1994 (Rel. 30, Last sequence update)
DT 01-OCT-1994 (Rel. 30, Last sequence update)
DT 10-MAY-2005 (Rel. 47, Last annotation update)
DT 10-MAY-2005 (Rel. 47, Last annotation update)
DT 10-MAY-2005 (Rel. 47, Last annotation update)
DT 10-MAY-2005 (Rel. 47, Last annotation update)
DT 10-MAY-2005 (Rel. 47, Last annotation update)
OC Wanne-ureB;
OS Helicobacter felis.
OC Bacteria; Protecobacteria; Epsilonprotecobacteria; Campyloba OC Helicobacteraceae; Helicobacter.
OC Helicobacteraceae; Helicobacter.
NNB1 TaxID=214;
RN [1]
RP NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                            049CA0F87E2CABID CRC64;
                                                                                                                                                                                                                                                                                                                                       Query Match 75.1%; Score 2251; DB 2; Best Local Similarity 73.9%; Pred. No. 8.8e-146; Matches 407; Conservative 72; Mismatches 72;
InterPro; IPR006680; Amidohydro 1.
InterPro; IPR008848; Urease_alpha.
InterPro; IPR008295; Urease_alpha.
InterPro; IPR011612; Urease_alpha.
Pfam; PF01979; Amidohydro 1; 1.
Pfam; PF00449; Urease_alpha; 1.
PRSF; PIRSF001226; Urease_alpha; 1.
PRNSF; PIRSF001226; Urease_alpha; 1.
PRNSF; PIRSF001226; Urease_alpha; 1.
PROSITE; PS01120; UREASE.
PROSITE; PS01120; UREASE 1; 1.
SEQUENCE 559 AA; 60607 MW; 049CAOF871
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEVFVDGKLCT 552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        m
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  542
        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                 542
                                                                                                                                                              242
                                                                                                                                                                                                              VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIGGAGGGHSPDVITMAGELNILPSSTTP 301
                                                                                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                                                                                             421
                                                                                                                                                                                                                                                                                                                                                                                                                                                     SQAMGRVGEVITRTWQTADKNKKEFGRLKEEKGDNDNFRIKRYLSKYTINPAIAHGISEY 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   541
        GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKMNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRAIN=CH-CTXI;
MEDLINE=20123532; PubMed=10660136;
Opazo P., Muller I., Rollan A., Valenzuela P., Yudelevich A.,
Garcia-de la Gaurda R., Urra S., Venegas A.;
"Serological response to Helicobacter pylori recombinant antigens in Chilean infected patients with duodenal ulcer, non-ulcer dyspepsia and gastric cancer.";
                                                                                                                                      243 VQVAIHTDTLNEAGCVKDTWAAIAGRTWHTFHTEGAGGGHAPDIIKVAGEHNILPASTNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                             SQAMGRAGEVI PRTWQTADKNKKEFGKL,PEDGKDNDNFRI KRYI SKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPOPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=2121498; PubMed=12125208;
MEDLINE=2121498; PubMed=12125208;
Muller I., Madina-Selby A., Palacios J.L., Martinez P., Opazo P.,
Muller I., Madina-Selby A., Palacios J.L., Martinez P., Opazo P.,
Muller I., Mancilla M., Valenzuela P., Yudelevich A., Venegas A.;
"Cloning and comparison of ten gene sequences of a Chilean H. pylori
strain with other H. pylori strains revealed higher variability for
Biol. Res. 35:67-84(2002)
EMBL, AR479026; AAL86896.1; -; Genomic_DNA.
HSSP, P14917; 1E93.
SMR; Q8RNU6; 1-553.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Name-ureB;
Helicobacter pylori (Campylobacter pylori).
Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales;
Helicobacteraceae; Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; Q8RNUG; 1-553.
GO:0016787; F:hydrolase activity; IEA.
GO:0016151; F:nickel ion binding; IEA.
GO:0009039; F:urease activity; IEA.
GO:0006807; P:nitrogen compound metabolism; IEA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      : |||||| :: |
543 YRVFVDGKEVTSKPANKVSLAQLFSIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-JUN-2002 (TrEMBLrel. 21,
01-JUN-2002 (TrEMBLrel. 21,
01-MAR-2004 (TrEMBLrel. 26,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QBRNUG_HELPY PRELIMINARY;
QBRNUG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APMIS 107:1069-1078 (1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              [1]
NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          [2]
NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Urease B subunit.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NCBI_TaxID=210;
                                                        123
                                                                                                                                                        183
                                                                                                                                                                                                                 242
                                                                                                                                                                                                                                                                                                                                                                    303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      483
     122
                                                                                                           182
                                                                                                                                                                                                                                                                                                                    302
                                                                                                                                                                                                                                                                                                                                                                                                                       362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVILT 1 10 CREVIL
```

361

421 422 481 482 541

301

```
Helicobacter hepaticus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NCBI_TaxID=32025;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SMR; 093PJ4;
                       242
                                                                                                      302
                                                                                                                                             303
                                                                                                                                                                                      362
                                                                                                                                                                                                                                363
                                                                                                                                                                                                                                                                                                                                                        482
                                                                                                                                                                                                                                                                                                                                                                                                 483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 12
033D44 HELHP
AC 093D44; (
DT 01-DEC-2)
DT 01-DEC-2)
DT 01-PEB-2)
DT 01-PEB-2)
DT 01-PEB-2)
DT 01-PEB-2)
DT 01-PEB-2
DT 01-PEB-2
DT 01-PEB-2
DT 01-PEB-2
DT 01-PEB-2
DT 01-PEB-2
DT 01-PEB-2
DT 01-PEB-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DE 01-DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2
DEC-2

                                                 셤
                                                                                         8
                                                                                                                                    셤
                                                                                                                                                                                      8
                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        원
                                                                                                                                                                                                                                                                                                                                                                                                                                                         This Swiss-Prot entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use as long as its content is in no way modified and this statement is not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            123 AEGLIVTAGGIDTHIHFISPQQIPTAFASGVTTMIGGGTGPADGTNATTITPGRANLKSM 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        122 GEGMIITAGGIDSHTHFLSPQQFFTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3 KISRKEYVSMYGPTTGDRVRLGDTDLILEVEHDCTTYGEIKFGGGKTIRDGMSQTNSPS 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LRAABEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                          Helicobacter species from humans and animals.";
Infect. Immun. 60:5259-526(1992).
Infect. Immun. 60:5259-526(1992).
-!- CATALYTIC ACTIVITY: Utea + H(2)0 = CO(2) + 2 NH(3).
-!- COPACTOR: Binds 2 nickel ions per subunit (By similarity).
-!- SUBUNIT: Consists of two subunits (alpha and beta).
-!- PTM: Lys-219 is carbamylated. The carbamoyl group provides the ligands for the two nickel ions (By similarity).
-!- SIMILARITY: Belongs to the urease family.
-!- SIMILARITY: Belongs to the beta subunit is what is known in
                                          of Helicobacter felis urease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Proton donor (By similarity).

Nickel 2 (By similarity).

Nickel 2 (By similarity).

Nickel 1 and 2 (By similarity).

Nickel 1 (By similarity).

Nickel 1 (By similarity).

Nickel 2 (By similarity).

Substrate (By similarity).

Substrate (By similarity).

Substrate (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 569;
                                                                                                                                           STRAIN=ATCC 49179;
PubMed=1452359;
Turbett G.R., Hoej P.B., Horne R., Mee B.J.;
"Purification and characterization of the urease enzymes of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Metal-binding; Nickel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               85; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    74.8%; Score 2244; DB 1; 72.5%; Pred. No. 2.7e-145; ive 71; Mismatches 85;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL, X69080; CA448826.1; -; Genomic_DNA.
PIR; C49215; C49215.
PIR; S35291; S35291.
HSSP, P14917; 1E92.
InterPro; IPR005680; Amidohydro 1.
InterPro; IPR005680; Urease alpha.
InterPro; IPR01612; Urease alpha.
InterPro; IPR01612; Urease alpha.
Ffam; PF01979; Amidohydro 1; 1.
Pfam; PF01979; Amidohydro 1; 1.
PIRSF001226; Urease alpha; 1.
PRINTS; PRO1752; UREASE.
TIGRRAMS; TIGR01792; UREASE.
                                                                                                                                                                                                                                                                                                                                                                                                                      other bacteria as the alpha subunit.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Direct protein sequencing; Hydrolase;
ACT_SITE 322 322 Proton do
METĀL 136 136 Nickel 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TICRFAMS; TIGRO1792; urease alph; 1. PROSITE; PSO1120; UREASE 1; 1. PROSITE; PSO0145; UREASE 2; 1.
MEDLINE=94018627; PubMed=8412683; Ferrero R.L., Labigne A.; , , (Cloning, expression and sequencing
                                                                                   Mol. Microbiol. 9:323-333(1993)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61703 MW;
                                                                                                        [2]
PROTEIN SEQUENCE OF 1-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 411; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           322
136
138
138
219
274
274
362
362
569 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   METAL
METAL
  ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
```

```
482
                                                                                                                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUCLEOTIDE SEQUENCE.
MEDINE=21391660; PubMed=11500473;
DOI=10.1128/IAI.69-9.5914-5920.2001;
BOCKWith C.S., McGee D.J., Mobley H.L.T., Riley L.K.;
"Cloning, expression, and catalytic activity of Helicobacter hepaticus
VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITWAGELNILPSSTTP
                              243 VQVAIHTDTLNEAGCVEDTLEAIAGRTIHTFHTEGAGGHAPDVIKMAGEFNILPASTNP
                                                                                                                                                                       TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                    422 IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDPKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SQAMGRAGEVIPRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE-22709201; PubMed=12810954; DOI=10.1073/pnas.1332093100; Sucrania-ATCC 51499 / 381; Sucrania-B. Doi-10.1073/pnas.1332093100; DubMed=122709201; PubMed=12810954; DOI=10.1073/pnas.1332093100; Sucrania-B. Diseacher B., Brandt P., Holland R., Klein K., Koenig J., Macko L., Mendz G.L., Hoerster A., Holland R., Klein K., Koenig J., Macko L., Mendz G.L., Nyakatura G., Schauer D.B., Shen Z., Weber J., Frosch M., Fox J.G.; The complete genome sequence of the carcinogenic bacterium Peroc. Natl. Acad. Sci. U.S.A. 100:7901-7906(2003).

EMBL; AR532656; AAK69199.1; -; Genomic_DNA.

EMBL; AB1917; 1E9Y.

HSSP; P18314; 1A5N.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bacteria, Proteobacteria, Epsilonproteobacteria, Campylobacterales;
Helicobacteraceae, Helicobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GO; GO:0016787; F:hydrolase activity; IEA.
GO; GO:0016151; F:nickel ion binding; IEA.
GO; GO:0009019; F:nicrase activity; IEA.
GO; GO:0006807; F:nitrogen compound metabolism; IEA.
InterPro; IPR006880; Amidohydro 1.
InterPro; IPR01612; Urease_alpha.
InterPro; IPR01512; Urease_alpha.
Pfam; PF01979; Amidohydro 1; 1.
Pfam; PF01979; Amidohydro 1; 1.
PRINTS; PR01752; UREASE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q33PJ4 HELHP PRELIMINARY; PRT; 569 AA.
Q93PJ4; Q7BYA2;
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-DEC-2005 (TrEMBLrel. 19, Last sequence update)
01-FRB-2005 (TrEMBLrel. 29, Last annotation update)
Urease beta subunit UreB (EC 3.5.1.5).
Name-ureB; OrderedLocusNames=HH0408;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                543 YKVKVDGKEVTSKAADELSLAQLYNLF 569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Infect. Immun. 69:5914-5920(2001)
```

```
62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE
                                                                                                                                                          removed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  METAL
METAL
METAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Loca
Matches
  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  420
                                                                                                                                                                                                                                                                                                                                                                                                                                240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPK 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL 120
                                                                                                                                                                                                                                                                                                  62 YTNELDAVITNAMIIDYTGIYKADIGIKGGKIVGIGKAGNPDTQDSVNEAMVVGAATEVI 121
                                                                                                                                                                                                                                                                                                                                                    AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHR 180
                                                                                                                                                                                                                                                                                                                                                                        AGEGQIITAGGIDTHIHFISPTQIPTALYSGVTTMIGGGTGPAAGTNATTCTPGKWNWHQ 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DSQAMGRAGEVI PRTWQTADKNKKEFGKL PEDGKDNDNFRI KRYISKYTINPALTHGVSE
                                                                                                                                                                                                                                                                                                                                                                                                                              MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                                                                                              MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGOSNSP
                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUCLECTIBE SEQUENCE (GENOMIC DNA), AND PARTIAL PROTEIN SEQUENCE.
NUCLECTIBE SEQUENCE (GENOMIC DNA), AND PARTIAL PROTEIN SEQUENCE.
MEDLINE=94117379; PubMed=8288534, Masaki H., Uozumi T.;
"Cloning, sequencing, and expression of thermophilic Bacillus si strain TB-90 urease gene complex in Escherichia coli.";
J. Bacteriol. 176:432-442(1994).
-:- CATALYTIC ACTIVITY: Urea + H(2)0 = CO(2) + 2 NH(3).
-:- CATALYTIC ACTIVITY: Great ions per subunit (By similarity).
-:- SUBUNIT: (Alpha, beta, gamma)(3) (By similarity).
                                                                                                                                                        ö
                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bacillus sp. (strain TB-90).
Bacteria; Firmicutes; Bacillales; Bacillaceae; Bacillus.
NCBI_TaxID=36824;
                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Last annotation update) (EC 3.5.1.5) (Urea amidohydrolase)
                                                                            569 AA; 61510 MW; 2825D1E6406F6429 CRC64;
                                                                                                              ; Score 2107; DB 2;
; Pred. No. 6.9e-136;
82; Mismatches 100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Last sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TFEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TIGRFAMS; TIGR01792; urease_alph;
PROSITE; PS01120; UREASE_1; 1.
PROSITE; PS00145; UREASE_2; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-OCT-1994 (Rel. 30, Created)
01-OCT-1994 (Rel. 30, Last seq.
13-SEP-2005 (Rel. 48, Last and
Urease alpha subunit (EC 3.5.1
Name=ureC;
                                                                                                                  70.3%;
                                                                                                                                    Best Local Similarity vo.v.
Matches 386; Conservative
                                                        Complete proteome.
SEQUENCE 569 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      URE1_BACSB
Q07397;
                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                        122
                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 13
UREL BACSB
UREL BACSB
AC Q07357
DT 01-0CT
DT 11-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 01-0CT
DT 0
                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                              ઠે
```

```
This Swiss-Prot entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use as long as its content is in no way modified and this statement is not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            123 AEGMIVTAGGIDAHIHFICPQQIETALASGVTTMIGGGTGPATGTNATTCTPGPWNIHRM 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      243 VQVAIHTDTLNEGGFVEDTLKAIDGRVIHTYHTEGAGGGHAPDIIKAAGFPNILPSSTNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3 MKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSN-SPD
ligands for the two nickel ions (By similarity).
SIMILARITY: Belongs to the urease family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        67.6%; Score 2028.5; DB 1; Length 569; 66.1%; Pred. No. 1.7e-130; tive 77; Mismatches 112; Indels 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    in sequencing; Hydrolase; Metal-binding; Nickel.
322 322 Proton donor (By similarity).
32  Nickel 2 (By similarity).
323 Nickel 1 and 2 (By similarity).
324 328 Nickel 1 and 2 (By similarity).
325 Nickel 1 (By similarity).
326 Nickel 1 (By similarity).
327 Substrate (By similarity).
328 Substrate (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           38AA83133A31A49D CRC64;
                                                                                                                                                                                                                                                                EMBL; D14439; BAA03325.1; -; Genomic_DNA
                                                                                                                                                                                                                                                                                     PIR; C36950; C36950.

HSSP, P18314; 1EJX.

InterPro; IPR016680; Amidohydro 1.

InterPro; IPR011550; Amidohydro like.

InterPro; IPR01848; Urease alpha.

InterPro; IPR011612; Urease alpha N.

InterPro; IPR01295; Urease alpha N.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ProDom; PD001248; Amidohydro like; 1.
TIGRFAMs; TIGR01792; urease alph; 1.
PROSITE; PS01120; UREASE 1; 1.
PROSITE; PS00145; UREASE 2; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pfam; PF01979; Amidohydro 1; 1.
Pfam; PF00499; Ureasea alpha; 1.
PRIRSF; PIRSF001226; Urease_alpha; 1.
PRINTS; PR01752; UREASE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    , 77 ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61397 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       362 3
221 2
569 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local Similarity
nes 375; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Direct protein 8
ACT SITE 322
METAL 136
```

```
239 EYDVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 [1] _
NUCLEOTIDE SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        URE1 BACSU
                                                                                                                                                                                                                                                                                                                                                          478 ]
                                                                                                                                                                               359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                        셤
                                  셤
                                                                                      8
                                                                                                                                                                             ò
                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                 원
                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      d
                         GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              119 ALAGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNL 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  179 HRMLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVAD 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQS--N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       59 SPDENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "Complete genome sequence of the alkaliphilic bacterium Bacillus halodurans and genomic sequence comparison with Bacillus subtilis."; Nucleic Acids Res. 28:4317-4331(2000).
EMBL: BA0000004; BAB03973.1; -; Genomic_DNA.
HSSP; P41020; 10BP.
SMR; Q9KGS9; 1-571.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUCLEOTIDE SEQUENCE.
STRAIN=C-125 / JCM 9153;
MEDLINE=20512582; PubMed=11058132; DOI=10.1093/nar/28.21.4317;
MEDLINE=20512582; PubMed=11058132; DOI=10.1093/nar/28.21.4317;
Makami H., Nakasone K., Takaki Y., Maeno G., Sasaki R., Masui N., Fuji F., Hirama C., Nakamura Y., Ogasawara N., Kuhara S., Horikoshi K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     <u>ب</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         67.2%; Score 2016.5; DB 2; Length
64.4%; Pred. No. 1.1e-129;
ive 88; Mismatches 112; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                      Bacteria, Firmicutes; Bacillales; Bacillaceae; Bacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61291 MW; 397398DECEA0ABOF CRC64;
                                                                                                                                                                                                                                                                                      01-0CT-2000 (TrEMBLrel. 15, Created)
01-0CT-2000 (TrEMBLrel. 15, Last sequence update)
01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
                                                                                                                                                                                                                                                 571 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GO; GO:001678; F:hydrolase activity; IEA. GO; GO:0016181; F:hydrolase activity; IEA. GO; GO:0016181; F:hydrolase activity; IEA. GO; GO:0019039; F:urea metabolism; IEA. InterPro; IPR006680; Amidohydrol. InterPro; IPR006848; Urease alpha. InterPro; IPR001818; Urease alpha. InterPro; IPR011612; Urease alpha.
                                                                                                               :|| |||:| | :| ||:|||| | 543 YEVKVDĞQLVTCEPAEIVPMAQRYFLF 569
                                                                                         FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pfam; PF00449; Urease_alpha; 1.
PIRSF: PIRSF001226; Urease_alpha; 1.
PRINTS; PR01752; UREASE.
TIGREAMS; TIGRO1792; Urease_alph; 1.
PROSITE; PS01120; UREASE_1; 1.
PROSITE; PS00145; UREASE_2; 1.
                                                                                                                                                                                                                                                                                                                                                                               Name=ureC; OrderedLocusNames=BH0254;
                                                                                                                                                                                                                                                                                                                                                        Urease alpha subunit (EC 3.5.1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Complete proteome; Hydrolase SEQUENCE 571 AA; 61291 MW
                                                                                                                                                                                                                                             Q9KG59 BACHD PRELIMINARY;
Q9KG59;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pfam; PF01979; Amidohydro_
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       368; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                        Bacillus halodurans.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=86665;
                                                                                         542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                    SESTITATION OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF
                                    g
                                                                                      ò
                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
```

RX STRAINE-98044033; PubMed-9384377; DOI=10.1038/36786;
Kunst F. Ogasawara N., Moszer I., Albertini A.M., Alloni G.,
Kunst F., Ogasawara N., Moszer I., Albertini A.M., Alloni G.,
Azevedo V., Bartero M.G., Bessieres P., Bolotin A., Borchert S.,
RA Azevedo V., Bartero M.G., Bessieres P., Bolotin A., Borchert S.,
RA Borriss R., Boursier L., Brans A., Braun M., Brignell S.C., Bron S.,
Brouillet S., Bruschi C.V., Caldwell B., Capuano V., Carter N.M.,
Choi S.-K., Codani U.-J., Connerton I.F., Cummings N.J., Daniel R.A.,
RA Choi S.-K., Codani U.-J., Funes S., Calizzi A., Galleron P.T.,
RA Fritz C., Fujita M., Fujita Y., Fuma S., Galizzi A., Galleron N.,
RA Guiseppi G., Guy B.J., Hagag K., Haiech J., Harwood C.R., Henaut A.,
RA Jones L.-M., Joris B., Karamata D., Kasahara Y., Klaerr-Blanchard M.,
RA Jones L.-M., Joris B., Karamata D., Kasahara Y., Klaerr-Blanchard M.,
RA Jones L.-M., Joris B., Karamata D., Kasahara Y., Klaerr-Blanchard M.,
RA Jones L.-M., Joris B., Karamata D., Kasahara Y., Klauber J.,
RA Lazarevic V., Lee S.M., Levine A., Liu H., Masuda S., Mauel C.,
Medigue C., Medina N., Mellado R.P., Mizuno M., Moestl D., Nakai S.,
RA Rose M., Sadaie Y., Sato T., Schlain E., Schleich S., Schroeter R.,
Scoffone F., Sekiguchi J., Sekwaka A., Seror S., Serror P.,
Scoffone F., Sekiguchi J., Sakwaka A., Tarconi E., Takagi T., Tarahashi H.,
RA Takemaru K., Takeuchi M., Tamakoshi A., Tarnaka T., Terpstra P.,
Tognoni A., Tosato V., Uchiyama S., Vandenbol M., Vannier F.,
Tognoni A., Tosato V., Uchiyama S., Vandenbol M., Vannier F.,
Vandench R., Weitzenegger T., Winters P., Wilpat A., Yamamoto H., Yamane K., 417 418 VSEYIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREM 477 TTPTIPYINTVAEHLDMLMTCHHLDKRIREDLQFSOSRIRPGSIAAEDVLHDMGVIAMT SSDSQAMGRAGEVIPRTWQTADKNKKEFGKLPED-GKDNDNFRIKRYISKYTINPALTHG FGHHGKAKFDISITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITV 01-NOV-1997 (Rel. 35, Created)
01-NOV-1997 (Rel. 35, Last sequence update)
10-MAY-2005 (Rel. 47, Last annotation update)
Urease alpha subunit (EC 3.5.1.5) (Urea amidohydrolase).
Name=ureC; OrderedLocusNames=BSU36640;
Bacillus subtilis. Bacteria, Firmicutes, Bacillales, Bacillaceae, Bacillus. NCBI_TaxID=1423; STRAIN=168; Glaser P., Cruz H., Danchin A.; Submitted (OCT-1996) to the EMBL/GenBank/DDBJ databases. NUCLEOTIDE SEQUENCE [LARGE SCALE GENOMIC DNA]. 569 AA 538 DPKTFEVFVDGKLCTSKPTSQVPLAQRYTFF

```
This Swiss-Prot entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use as long as its content is in no way modified and this statement is not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181 ARMLEAAEEFPINVGFLGKGNASDKAPLIEQVEAGAIGLKLHEDWGTTPSAIKTCMEVVD 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TTPT1PYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMT 358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        59 SPDENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTE 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          119 ALAGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNL 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               179 HRMLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVAD 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EYDVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSS 298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSN-- 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 MKMSREEYAELFGPTTGDKIRLGDTDLWIEVEKDFTVYGEEMIFGGGKTIRDGMGQNGRI
Yasumoto K., Yata K., Yoshida K., Yoshikawa H.-F., Zumstein B., Yoshikawa H., Danchin A.; "The complete genome sequence of the Gram-positive bacterium Bacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                    Nature 390:249-256(1997).

-!- CATALYTIC ACTIVITY: Urea + H(2)O = CO(2) + 2 NH(3).

-!- COPACTOR: Binds 2 nickel ions per subunit (By similarity).

-!- SUBUNIT: (Alpha, beta, gamma) (3) (By similarity).

-!- FTM: Lys-220 is carbamylated. The carbamoyl group provides the ligands for the two nickel ions (By similarity).

-!- SIMILARITY: Belongs to the urease family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .,
2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 1; Length 569;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Proton donor (By similarity).
Nickel 2 (By similarity).
Nickel 1 (By similarity).
Nickel 1 and 2 (By similarity).
Nickel 1 (By similarity).
Nickel 1 (By similarity).
Nickel 2 (By similarity).
Nickel 2 (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 95; Mismatches 114; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           222 Substrate (By similarity) 61187 MW; A2712A6172DASBE7 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Hydrolase; Metal-binding; Nickel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               66.1%; Score 1981.5; DB 1 62.5%; Pred. No. 2.8e-127;
                                                                                                                                                                                                                                                                                                                   EMBL; Y08559; CAA69859.1; -; Genomic_DNA.
EMBL; Z99122; CAB15681.1; -; Genomic_DNA.
PIR; D69729; D69729.
                                                                                                                                                                                                                                                                                                                                                                HSSP, D18114; 1FWB.
Subtilist; BG1183; urec.
InterPro; IPR006880; Amidohydro 1.
InterPro; IPR006880; Amidohydro 1.
InterPro; IPR001550; Amidohydro 1.
InterPro; IPR001550; Urease alpha.
InterPro; IPR001512; Urease alpha.
InterPro; IPR008395; Urease alpha N.
InterPro; IPR008395; Urease alpha N.
Pfam; PF00449; Urease alpha; 1.
PfRSF; PIRSF001226; Urease alpha; 1.
PRNYS; PR01752; UREASE.
ProDom; PD001248; Amidohydro like; 1.
IIGRAMs; IGR01120; UREASE.
PROSITE; PS00145; UREASE 1; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches 357; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     222
223
249
223
223
223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Complete proteome;
ACT_SITE 323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             569 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                    removed
   ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
```

```
301 TTPTIPYTVNTMDEHLDMMMVCHHLDAKVPEDVAFSHSRIRAATIAAEDILHDIGAISMT 360
                                                                477
                                                                            FGHHGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITV 537
                                                                                                                      418 VSEYIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREM
                     SSDSQAMGRAGEVIPRTWQTADKNKKEFGKLP-EDGKDNDNFRIKRYISKYTINPALTHG
                                                                                                                                                     DPKTFEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                  419
                                                                                                           478
                      359
                                           361
                                                                                                                                                     538
                     8
                                     6 B
                                                                               셤
                                                                                                         ò
                                                                                                                            유
                                                                                                                                                    8
```

Search completed: November 28, 2005, 08:19:48 Job time : 222.186 secs

```
November 28, 2005, 07:55:02; Search time 185.28 Seconds (without alignments) 1346.976 Million cell updates/sec
                                                                                                                                                             2999
1 MKWKKQEYVNTYGPTKGDKV......KLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                   2443163
GenCore version 5.1.6
(c) 1993 - 2005 Compugen Ltd.
                                                                                                                                                                                                                                                                                 Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                      2443163 segs, 439378781 residues
                                                                                                                                                                                                                                                                                                                                                        Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                          using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           geneseqp2002s:*
geneseqp2003as:*
geneseqp2003bs:*
geneseqp2004s:*
geneseqp2005s:*
                                                                                                                                                                                                         BLOSUM62
Gapop 10.0 , Gapext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                geneseqp2000s:*
geneseqp2001s:*
                                                                                                                                                                                                                                                                                                                                                                                                                                    geneseqp1980s:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                  geneseqp1990s:*
                                                                                                                                                                                                                                                                                                              Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                               US-09-904-994B-3
                                                                                                                                                                                                                                                                                                                                                                                                                     Geneseq 21:*

    protein search,

             Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                     A ::
                                                                                                                                                                                                                                                                                                                                                                                                                                                  2 6 4 6 6 7 8 9
                                                                                                                                                                                                                                                                                                                                                            Post-processing:
                                                                                                                                                                                                         Scoring table:
                                                                                                                                                                score:
                                                           OM protein
                                                                                                                                                                              Sequence:
                                                                                                                                                                                                                                                       Searched:
                                                                                                                                                 Title:
Perfect
                                                                                                                                                                                                                                                                                                                                                                                                                      Database
                                                                                       Run on:
```

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

	Description	Adj58239 Urease su	Adj58251 UreaseXY	Adj58242 UreaseXY	Adj58248 UreaseXY	Adj58245 UreaseXY	Adq37851 H. bizzoz	Pa	Aaw07194 H. pylori	Aaw98511 H. pylori	Pr	ï	Ads09177 H. pylori	8 H.	Aeb55116 Hylicobac	Aar74337 Helicobac	Aaw06730 H. felis	Aaw80599 Helicobac	Aar67371 Urease A		Adm28644 Helicobac	Aar36387 Urease ga	Abul9714 Protein e	Abu41362 Protein e	Abu21842 Protein e
SUMMARIES	ΙD	ADJ58239	ADJ58251	ADJ58242	ADJ58248	ADJ58245	ADQ37851	AAR04580	AAW07194	AAW98511	ABU30687	ADU05536	ADS09177	AAR67378	AEB55116	AAR74337	AAW06730	AAW80599	AAR67371	AAR13550	ADM28644	AAR36387	ABU19714	ABU41362	ABU21842
	DB	₁	Ŋ	S	w	Ŋ	œ	7	~	~	9	80	80	~	4	~	7	~	~	7	œ	7	9	9	9
	Length	568	268	268	268	496	569	569	569	569	569	569	268	569	570	569	569	749	806	559	559	568	568	995	568
•	Query Match	100.0	99.1	98.7	98.5	86.3	77.6	9.9/	9.9/	9.9/	9.9/	9.9/	76.1	76.1	76.1	74.8	74.8	74.6	74.6	74.5	74.2	67.1	64.1	63.8	63.6
	Score	2999	2973	2960	2953	2588	2326	2297	2297	2297	2297	2297	2282	2281	2281	2244	2244	2238	2237	2233	2225	2013.5	1922	1914	1907
	Result No.	-	7	٣	4	ß	9	7	a 0	6	10	11	12	13	14	15	16	17	18	19	20	21		23	24

Abu22314 Protein e	Abu38819 Protein e	Abo78141 Pseudomon	Abu30286 Protein e	щ	Abo62699 Klebsiell	Adf05744 Bacterial	Abu41210 Protein e	М,		•		Aar67379 P. mirabi	-	Abu28920 Protein e	Adc00113 Enterohae	ш,			Abp40181 Staphyloc	Ads07231 Staphyloc
ABU22314	ABU38819	ABO78141	ABU30286	ABU32083	AB062699	ADF05744	ABU41210	ADA34625	AAW37774	AAY81825	ABU17040	AAR67379	ABU28899	ABU28920	ADC00113	ABU40328	AAG81512	ABU42650	ABP40181	ADS07231
9	ø	7	9	9	7	7	9	ø	7	m	ø	7	9	9	7	9	4	9	ហ	ω
568	999	999	572	267	625	269	779	267	567	567	999	568	568	268	568	567	571	811	573	573
63.3	61.1	61.0	6.09	6.09	60.7	9.09	9.09	9.09	9.09	9.09	60.5	60.4	60.3	60.3	60.3	59.9	59.7	59.7	59.6	59.6
1897	1832	1828	1826	1825	1821	1818.5	1818.5	1818	1817	1817	1815	1811.5	1809	1809	1809	1797	1789.5	1789.5	1788.5	1788.5
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45

ALIGNMENTS

```
The present invention relates to a novel Helicobacter felis urease X and Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis. Helicobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an urease Y subunit polypeptide of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                         Novel Helicobacter felis urease X and Y subunit polypeptides, useful in the diagnosis of Helicobacter felis infections and in the preparation of
                                                                                                                                                 immunogenic fragment; antibacterial; Vaccine; Helicobacter felis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 10; SEQ ID NO 3; 76pp; English.
                          ADJ58239 standard; protein; 568 AA.
                                                                                                                      Urease subunit polypeptide Y.
                                                                                                                                                                                                                                                                            11-JUL-2001; 2001EP-00202666.
                                                                                                                                                                                                                                                                                                          17-JUL-2000; 2000EP-00202565.
                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                    Cattoli G;
                                                                                                                                                                                                                                                                                                                                    (ALKU ) AKZO NOBEL NV.
                                                                                                                                                                                                                                                                                                                                                                                                WPI; 2002-124384/17.
N-PSDB; ADJ58237.
                                                                                                                                                                                  Helicobacter felis.
                                                                                                                                                                                                                EP1176192-A2
                                                                                                                                                                                                                                                                                                                                                                      Kusters JG,
                                                                                                                                                                                                                                              30-JAN-2002.
                                                                                        06-MAY-2004
                                                           ADJ58239;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               vaccines
               ADJ58239
RESULT 1
```

Sequence 568 AA;

Length 568;

Query Match

DB 5; 100.0%; Score 2999;

```
immunogenic fragment; antibacterial; Vaccine; Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  568
                                                                                                                                    99.1%;
98.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 standard; protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                entry
                                                                                                                                           Best Local Similarity 98.9
Matches 562; Conservative
                                                                                                                                   Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              UreaseXY subunit
                                                                                                                      Sequence 568 AA;
                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                    361
                                                                                                                                                                                                                                                                                                                                                                    361
                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                421
                                                                                                                                                                                                                                                                                                                                                                                                                481
                                                                                                                                                                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                61
                                                                                                                                                                                                              61
                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                      301
                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                                              541
                                                                                                                                                                                                                                                                                                                                                                                                                                                            541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADJ58242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ADJ58242;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADJ58242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                               ò
                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                     유
                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                              요
                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                  ઢ
               ö
                                                                                                                                                                                 360
                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                           540
                                                                                                                                                                                                                                                                                  300
                                                                                                                                                                 300
                                                                                                                                                                                               360
                                                                                                                                                                                                              420
                                                                                                                                                                                                                              420
                                                          DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL 120
                                                                  AGEGMIITAGGIDSHTHFLSPQOFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHR 180
                                                                                                240
                                                                                                                                    240
                              9
                                           9
                                                                                                                                                                                PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS
                                                                                                                                                                                                                       DVQVCIHTDTVNEAGYVDDTINAMNGRAIHAYHIEGAGGGGHSPDVITWAGELNILPSSTT
                                                                                                                                                                                           PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS
                                                                                                                                                                                                                                                    YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPOPVYYREMFGH
                                                                                                                                                   DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTT
                                                                                                                                                                                                              DSQAMGRAGEVI PRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSE
                                                                                                                                                                                                                                             YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH
                                                                                                                                                                                                                                                                          HGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPK
                                     MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                                                     MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                              MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
               Gaps
               ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                      antibacterial; Vaccine; Helicobacter
              Indels
       Pred. No. 3.5e-253;
               ö
               Mismatches
                                                                                                                                                                                                                                                                                                        TFEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                TFEVEVDGKLCTSKPTSQVPLAQRYTFF
100.08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   11-JUL-2001; 2001EP-00202666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 17-JUL-2000; 2000EP-00202565
                                                                                                                                                                                                                                                                                                                                                             standard; protein;
              568; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (ALKU ) AKZO NOBEL NV.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 2002-124384/17.
N-PSDB; ADJ58249.
                                                                                                                                                                                                                                                                                                                                                                                                        UreaseXY subunit #8
                                                                                                                                                                                                                                                                                                                                                                                                                                       Helicobacter felis
       Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Kusters JG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                     EP1176192-A2
                                                                                                                                                                                                                                                                                                                                                                                         06-MAY-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    30-JAN-2002
                                                                                                                                                                                                                                                                                                        541
                                                                                                                                                                                                                                                           421
                                                                                         121
                                                                                                                                    181
                                                                                                                                                   241
                                                                                                                                                                 241
                                                                                                                                                                                               301
                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                             421
                                                                                                                                                                                                                                                                           481
                                                                                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                                                             ADJ58251
                                                          61
                                                                                                      121
                                                                                                                     181
                                                                                                                                                                                301
                                                                                                                                                                                                              361
                                                                        61
                                                                                                                                                                                                                                                                                                                                                                            ADJ58251
              Matches
                                                                                                                                                                                                                                                                                                                                             원
                                                                                                                                                                              Š
                                                                                                                                                                                             QQ
                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                     g
                                                                                                 g
                                                                                                                ò
                                                                                                                                 음
                                                                                                                                                  ò
                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                         ò
                                                        ò
                                                                    g
                                                                                      ઠ
                                       a
```

```
ö
                                                                                                                                               The present invention relates to a novel Helicobacter felis urease X and Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an ureaseXX subunit of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
Novel Helicobacter felis urease X and Y subunit polypeptides, useful in the diagnosis of Helicobacter felis infections and in the preparation of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DVQVCIHTDTVNEAGYVDDTLNAMGRAIHAYHIEGAGGGHSPDVITMAGEVNILPSSTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MLRAAEEYSMNVGFLGKGNSSSKKOLVEOVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DSQAMGRAGEVIPRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 568;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 2973; DB 5;
Pred. No. 6.6e-251;
4; Mismatches 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              568
                                                                                                    Disclosure; SEQ ID NO 15; 76pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TFEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TFEVFVDGKLCTSKPTSEVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ā
```

```
The present invention relates to a novel Helicobacter felis urease X and Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis. Helicobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an
481 HGKAKFDTSITFVSKVAYENGVKEKLGLERKVLPVKNCRNITKKDFKFNNKTAHITVDPK 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             il Helicobacter felis urease X and Y subunit polypeptides, useful in diagnosis of Helicobacter felis infections and in the preparation of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGEGMI I TAGGI DSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTI TPGKWNLHR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MKMKKQEYVNTYGPTTGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DENTLDLVITNAMI I DYTGI YKADI GI KNGKI HGI GKAGNKDMQDGVS PHMVVGVGTEAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121 AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                            immunogenic fragment; antibacterial; Vaccine; Helicobacter felis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 2953; DB 5;
Pred. No. 3.7e-249;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Disclosure; SEQ ID NO 12; 76pp; English.
                                                             TFEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                    Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ureaseXY subunit of the invention.
                                                                                                                                                                    568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             11-JUL-2001; 2001EP-00202666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 17-JUL-2000; 2000EP-00202565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          98.5%;
98.2%;
                                                                                                                                                                    ADJ58248 standard; protein;
                                                                                                                                                                                                                                            entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (ALKU ) AKZO NOBEL NV.
                                                                                                                                                                                                                                          (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 2002-124384/17.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Novel Helicobacter
                                                                                                                                                                                                                                                                                                                                                   Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                UreaseXY subunit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N-PSDB; ADJ58246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 568 AA;
                                                                                                                                                                                                                                                                                                                                                                                      EP1176192-A2
                                                                                                                                                                                                                                          06-MAY-2004
                                                                                                                                                                                                                                                                                                                                                                                                                        30-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local Simi
nes 558;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Kusters JG,
                                          541
                                                                                                                                                                                                         ADJ58248;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                RESULT 4
ADJ58248
ID ADJ5
                                                                                                                                                                                        셤
     엄
                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ጽ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis. Helicobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an ureaseXY subunit of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPK 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHWVVGVGTEAL 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PIIPYINIVAEHLDMLMICHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDIGVIAMISS 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   480
                                                                                                                                                                                                                                                                                                                                Novel Helicobacter felis urease X and Y subunit polypeptides, useful in the diagnosis of Helicobacter felis infections and in the preparation of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9
                                                                                                                                                                                                                                                                                                                                                                                                                                            present invention relates to a novel Helicobacter felis urease X and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGADNDNFRIKRYISKYTINPALTHGVSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DSQAMGRAGEVI PRTWQTADKNKKEFGKL PEDGKDNDNFRIKRYISKYTINPALTHGVSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DENTLDLVITNAMI1DYTG1YKAD1G1KNGKIHG1GKAGNKDMQDGVSPHMVVGVGTEAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AGEGMI ITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ..
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 568;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 2960; DB 5;
Pred. No. 9.1e-250;
4; Mismatches 4;
                                                                                                                                                                                                                                                                                                                                                                                                         Disclosure; SEQ ID NO 6; 76pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              98.7%;
                                                                                                                                11-JUL-2001; 2001EP-00202666
                                                                                                                                                                    17-JUL-2000; 2000EP-00202565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity 98.6
Matches 560; Conservative
                                                                                                                                                                                                                                            Cattoli G;
                                                                                                                                                                                                         (ALKU ) AKZO NOBEL NV.
                                                                                                                                                                                                                                                                              2002-124384/17.
                                                                                                                                                                                                                                                                                                 N-PSDB; ADJ58240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 568 AA;
                                                           EP1176192-A2
                                                                                                                                                                                                                                            Kusters JG,
                                                                                               30-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                         vaccines
```

g

ò В 8 8 ò g ò 셤 ઠ 셤 ò g ઠે

ઠે

ö

120 120 180

9

240

셤

240

ö

Gaps

ö

Indels

9 9 120 120 180 180 240

240 300 300 360 360 420 420 480

qq

ò

g

8

g

ò

ò

g

g

ð g

ò

```
DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL
                                                                                                                                                                                                                                                                                                                                                    PIIPYINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDIGVIAMTSS
                                                                                                                                                                                                                                                                                                                                                                                                               YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH
                                                AGEGMI ITAGGI DSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTI TPGKWNLHR
                                                                                                                                                                      AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHR
                                                                                                                                                                                                                MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                                                                                                                                 DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTT
                                                                                                                                                                                                                                                                                                                                     PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS
                                                                                                                                                                                                                                                                                                                                                                                              DSQAMGRAGEVI PRTWQTADKNKKEFGKL PEDGKDNDNFRIKRYISKYTINPALTHGVSE
                                MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                           DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMODGVSPHMVVGVGTEAL
                                                                                                                                                                                                                                                                          DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                        YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                urease structural gene;
Helicobacter bizzozeronii infection;
   7
   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 H. bizzozeronii ureB polypeptide.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           569
   1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Urease, urease gene cluster;
urease accessory gene; ureB;
antibacterial; enzyme.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ņ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  12-AUG-2003; 2003US-00639273.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                16-AUG-2002; 2002US-0404337P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           standard; protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Zhu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Helicobacter bizzozeronii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HGKAKFDTSITF 492
   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Chang Y, Simpson KW,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 2004-533502/51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CHANG Y.
SIMPSON B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N-PSDB; ADQ37850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US2004142343-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     07-OCT-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      22-JUL-2004
   489;
                                Н
                                                                                           61
                                                                                                                       61
                                                                                                                                                                                 121
                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                            361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      421
                                                                                                                                                     121
                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                         421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADQ37851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ADQ37851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (CHAN/)
(SIMP/)
(ZHUJ/)
   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADQ37851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           용
                                                                                                                   셤
                                                                                                                                                                            셤
                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                       B
                                                                                                                                                                                                                                                                        6
                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                              유
                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                        ò
                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                              ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The present invention relates to a novel Helicobacter felis urease X and Y subunit polypeptides and immunogenic fragments. The polypeptides are used in the manufacture of vaccines against Helicobacter felis infections and in diagnostic tests to detect antibodies against Helicobacter felis. Helicobacter felis is difficult to grow so it is more convenient to use the expression products of the genes encoding the urease X and Y subunits in the manufacture of vaccines. The present sequence represents an ureaseXX subunit of the invention.
                                                                                                                                                     420
   300
                                                              360
                                                                             PTIPYTINIVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDIGVIAMTSS 360
                                                                                                                         420
                                                                                                                                                                                  480
                                                                                                                                                                                                  HGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPK 540
                                                                                                                                                                                                                                                            HGKAKFDTSITFVSKVAYENGVKEKLGLERKVLPVKNCRNITKKDFKFNNKTAHITVDPK 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      al Helicobacter felia urease X and Y subunit polypeptides, useful in diagnosis of Helicobacter felia infections and in the preparation of
              DSQAMGRAGEVI PRTWQTADKNKKEFGKL, PEDSADNDNFRIKRYI SKYTINPALTHGVSE
DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGGHSPDVITMAGELNILESSTT
                                                              PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS
                                                                                                                      DSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSE
                                                                                                                                                                                 YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPOPVYYREMFGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   antibacterial; Vaccine; Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 496;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 2588; DB 5;
Pred. No. 2.8e-217;
                                                                                                                                                                                                                                                                                                    TFEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Disclosure; SEQ ID NO 9; 76pp; English.
                                                                                                                                                                                                                                                                                                                     Ā
                                                                                                                                                                                                                                                                                                                                                                                                           ADJ58245 standard; protein; 496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 86.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      11-JUL-2001; 2001EP-00202666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   17-JUL-2000; 2000EP-00202565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Cattoli G;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                immunogenic fragment;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 2002-124384/17.
N-PSDB; ADJ58243.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    subunit #4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (ALKU ) AKZO NOBEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EP1176192-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      06-MAY-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Kusters JG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        30-JAN-2002
                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     UreaseXY
                               241
                                                                                                                      361
                                                                                                                                                   361
                                                                                                                                                                               421
                                                                                                                                                                                                             421
                                                                                                                                                                                                                                           481
                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                    541
                                                                                                                                                                                                                                                                                                                                   541
                                                                                                                                                                                                                                                                                                                                                                                                                                        ADJ58245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       vaccines
                                                           301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
```

480

Novel isolated nucleic acid molecule having urease gene cluster, and

Best Local Similarity

Novel the

ADJUSTANT SAND SR245 AND S

```
The invention relates to an isolated nucleic acid molecule conferring on Helicobacter bizzozeronii an ability to produce urease, where the nucleic acid molecule is a urease gene cluster comprising at least one urease extructural gene and at least one urease accessory gene. The nucleic acid invention also relates to an isolated protein encoded by the nucleic acid invention also relates to an isolated protein encoded by the nucleic acid, a vaccine for preventing onset of disease in mammals infected by H. bizzozeronii comprising a nucleic acid and a carrier, and an isolated antibody or its binding portion raised against the nucleic acid. The nucleic acids proteins and antibodies are useful for vaccinating mammals capainst onset of disease caused by infection of H. bizzozeronii, which involves administering the sequences. The sequences are useful for detecting H. bizzozeronii in a sample of tissue or body fluids which involves providing a nucleic acid as an antigen, providing an uncleotide sequence as a probe in a nucleic acid in the probe, and detecting any reaction which indicates that H. bizzozeronii is present in the sample. This sequence represents the H. bizzozeronii ureB
conferring on Helicobacter bizzozeronii ability to produce urease, useful
as vaccine for preventing disease in mammals infected by H.bizzozeronii.
                                                                                        Claim 24; SEQ ID NO 5; 40pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         polypeptide.
```

Sequence 569 AA;

```
302
                                                                                                    63 SHELDLVLTNALIVDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVCNNLCVGPATEALA 122
                                                                                                                                              362
                                                                                                                                                                                                                                                                                                                                     422
                                                                                                                                                                                                                                                                                                                                                                                 482
                                                                                                                                                                                                                                                                                                                                                                                                      541
                                                                                                                                                                                                                                                                                                                                                                                                                            542
                                                                                        121
                                                                                                                                   181
                                                                                                                                                                               241
                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                     361
                                                                                                                                                                                                                                                                                                                421
                                                                                                                                                                                                                                                                                                                                                           481
                                                                 62
                                             61
                                                          SQAMGRVGEVITRTWQTADKNKKEFGRLPEEKGDNDNFRIKRYISKYTINPAIAHGISEY
                                                                                                                                                                                                                                                                                                                                                                         ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                   GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM
                                                                                                                                                                               LRAAEEYSMINGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                     TIPYTINTVAEHLDMLMTCHHLDKRIREDLOFSOSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                   KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                          VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYH1EGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                            IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                        GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                        Gaps
                        ö
 Length 569;
                      Indels
77.6%; Score 2326; DB 8; 74.1%; Pred. No. 3.1e-194; ive 75; Mismatches 72;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                S43 YKVKVDGKEVTSKAADKISLAQLYNLF
            Local Similarity 74.1
nes 420; Conservative
                                                                                         62
                                                                                                                                   122
                                                                                                                                                                                                    183
                                                                                                                                                                                                                                               243
                                                                                                                                                                                                                                                                                                                                                            422
                                                                                                                                                                                                                                                                                                                                                                                  423
                                                                                                                                                                               182
                                                                                                                                                                                                                          242
                                                                                                                                                                                                                                                                                           303
                                                                                                                                                                                                                                                                                                                362
                                                                                                                                                                                                                                                                                                                                      363
                                                                                                                                                                                                                                                                                                                                                                                                        482
                                                                                                                                                                                                                                                                                                                                                                                                                             483
   Query Match
                                                                                                                                                                                                                                                                     302
                                             ò
                                                                셤
                                                                                        ò
                                                                                                         셤
                                                                                                                                ò
                                                                                                                                                      셤
                                                                                                                                                                               ò
                                                                                                                                                                                               셤
                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                             유
                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
```

121

61 62 181

241

301

361

RESULT

```
also
on 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GEGLIVTAGGIDTHIHFISPQQIPTAFASGVTTMIGGGTGPADGTNATTITPGRRNLKWM 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               243 VQVAIHTDTLNEAGCVEDTMAAIAGRTWHTFHTEGAGGGHAPDIIKVAGEHNILPASTNP 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY 421
                                                                                                                                                                                                                                                                                                                                                                        New nucleotide sequences encoding Campylobacter pylori-ureaseents - and derived vectors, transformants, protein, antibodies and probes, useful diagnosis, treatment and prevention of infections.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VOVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2 KWKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                              The protein can be used for the prodn. of antibodies and to prepare vaccines for the prevention (freatment of C. pylori infections. See AAR04578-81. (Updated on 25-MAR-2003 to correct PA field.) (Updated -OCT-2003 to standardise OS field)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  76.6%; Score 2297; DB 2; Length 569; 73.4%; Pred. No. 1.1e-191; cive 76; Mismatches 75; Indels (
                                                                                                                                                                                                                                                                                     MED.
                                                                                                                                                                                                                                                                        (INSP ) INST PASTEUR.
(INRM ) INSERM INST NAT SANTE & RECH
                                                                                              Part of protein with urease activity
Ŕ
569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         , 16;
                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 12; Page 34; 47pp; French
                                                                                                                                                                                                                         88FR-00013135.
                                                                                                                                                                                                                                                88FR-00013135
 protein;
                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                               (revised)
                                                                                                                                                                                                                                                                                                                                     WPI; 1990-147844/19.
                                                                                                                                                Helicobacter pylori
standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity
                                                                                                                                                                                                                                                                                                                                                 N-PSDB; AAQ04329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 569 AA;
                                                                                                                          Urease; probe
                                                                                                                                                                                                                         06-OCT-1988;
                                                                                                                                                                                                                                                 06-OCT-1988;
                                                                                                                                                                        WO9004030-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Best Local Simi
Matches 416;
                                               24-OCT-2003
                                                                        21-SEP-1990
                                                                                                                                                                                                19-APR-1990
                                                            25-MAR-2003
                                                                                                                                                                                                                                                                                                             Labigne A;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      362
AAR04580
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
```

241

301

361

음

Dp ò g

ò

g

ò

```
GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                          243 VQVAIHTDTLNEAGCVEDTMAAIAGRTWHTFHTEGAGGGHAPDIIKVAGEHNILPASTNP 302
                                                                                                                                                                                                                                                                                                                                                 GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         New isolated Helicobacter polynucleotides - used to develop products for
the diagnosis, prevention and treatment of Helicobacter infections and
gastrointestinal diseases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GHPO protein; Helicobacter infection; gastroduodenal disease; gastritis;
                              ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                VOVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGGSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                            TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                          SQAMGRAGEVI PRTWQTADKNKKE FGKL, PEDGKDNDNFR I KRY I SKYT I NPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Oomen RP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ۵,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SERUMS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Tomb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (INMR ) MERIEUX ORAVAX PASTEUR MERIEUX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Kleanthous H, Al-Garawi A, Miller C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ġ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAW98511 standard; protein; 569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        97US-00833457.
97US-00881227.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   98WO-US006371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               97US-00902615
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (HUMA-) HUMAN GENOME SCI INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             H. pylori GHPO 1248 protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       peptic ulcer disease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 1998-542293/46.
N-PSDB; AAX14230.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WO9843478-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-APR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-APR-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               29-JUL-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      31-MAR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            24-JUN-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            08-OCT-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                               363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                542
        62
                                             63
                                                                                                                                                                                                         183
                                                                                                                                                                                                                                                242
                                                                                                                                                                                                                                                                                                                            302
                                                                                                                                                                                                                                                                                                                                                                                                          362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAW98511;
                                                                                    122
                                                                                                                                                                  182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               THE STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD
                                         g
                                                                                                                 셤
                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                    ò
                                                                                                                                                                ò
                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          encoded by the ureA + ureB gene locus of clinical isolate CPM650.

Vectors, e.g. pORV214 (see also AAT44351), carrying the gene locus can be used to transform host cells for the large-scale prodn. of recombinant, enzymatically inactive, multimeric urease. The urease complex induces a mucosal immune response that can treat or prevent Halicobacter, esp. H. pylori, gastroduodenal infection. (Updated on 16-OCT-2003 to standardise
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Vaccine for inducing mucosal response to Helicobacter - contg. multimeric urease complex and pref. an antibiotic, anti-secretory agent or bismuth
                                                                                                                                                                                  542
                                                                 481
                                                                                    GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3 KISRKEYVSMYGPTTGDKVRLGDTDLIAEVEHDYTIYGEELKFGGGKTLREGMSQSNNPS 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Urease A (AAW07193) and B (AAW07194) subunits of Helicobacter pylori are
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Kleanthous H;
Sussman I;
                                                             IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              76.6%; Score 2297; DB 2; Length 569; 73.4%; Pred. No. 1.1e-191;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Soman G,
Bhagat H,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       75;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Monath TP, Ackerman SK, Thomas WD, A, Pappo J, Ermak T, Guirakhoo F,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   76; Mismatches
                                                                                                                                                                                                                           568
                                                                                                                                                                                                                                                Urease; ureA gene; ureB gene; vaccine.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Disclosure; Page 71-73; 98pp; English.
                                                                                                                                                                                                                         FEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                   Ž
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Helicobacter pylori; strain CPM630
                                                                                                                                                                                                                                                                                                                                                                 AAW07194 standard; protein; 569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          96WO-US005800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               95US-00431041
95US-00568122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         H. pylori urease B subunit.
                                                                                                                                                                                                                                                                                                                                                                                                                                             (revised)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Weltzin RA, Pappo J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 1996-497373/49.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORAV-) ORAVAX INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 569 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                N-PSDB; AAT44351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               28-APR-1995;
06-DEC-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        25-APR-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WO9633732-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                           16-OCT-2003
11-FEB-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 31-OCT-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       416;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Si
Matches 416
                                                                                                                                                                                                                                                                                                                                                                                                      AAW07194;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             field)
                                                                                                    423
                                                                                                                                           482
                                                                                                                                                                                                                           542
                                                                                                                                                                                                                                                              543
                                                                                                                                                                                  483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GK,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Vaccine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               pylori
OS fie
                                                                                                                                                                                                                                                                                                                                            RESULT
```

ठ 원

422

481 482

```
06-SEP-2001;
25-OCT-2001;
08-FEB-2002;
                                                                            06-MAR-2002;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                'nά
                                                                                                                                                                                                      Claim
                                                                                                                Wang
Wall
셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                  ö
                                                             рę
                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                            242
                                                                                                                                                                                                                                                                                                                                                 362
                                                                                                                                                                                                                                                                                                                                                                                  422
                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                      482
                                                                                                                                                                                                                                                                                                                                                                                                                                        541
                                                                                                                                                                                                                                                                                                                                                                                                                                                         542
                                                                                                                                                                                     ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                        GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                             VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP 301
                                                                                                                                                                                                                                                                                                                                TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361
                       This sequence represents a Helicobacter pylori GHPO protein of the invention. The polypeptides can be used for preventing or treating Helicobacter infections, and gastroduodenal diseases associated with these infections, including acute, chronic, and atrophic gastritis, and peptic ulcer diseases, e.g. gastric and duodenal ulcers. They can also be used for the production of antibodies. The products can also be used for
                                                                                                                                                   61
                                                                                                                                                               essential gene; cell proliferation; drug design.
                                                                                                                                                                                                                                                                    483 GKAKYDANITFVSQAAYDKGIKEELGLERQVLPVKNCRNITKKDMQFNDTTAHIEVNPET
                                                                                                                                                                                                                                                          LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                          <u>SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY</u>
                                                                                                                                                                                                                                                                                                                                                                           KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                     IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                        GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                  ö
                                                                                                               Length 569;
                                                                                                                                  75; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Protein encoded by Prokaryotic essential gene #16214.
                                                                                                              Query Match 76.6%; Score 2297; DB 2; Best Local Similarity 73.4%; Pred. No. 1.1e-191; Matches 416; Conservative 76; Mismatches 75;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
         Page 960-962; 2054pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    : |||||| |||| ::| ||| ::|
YHVFVDGKEVTSKPANKVSLAQLFSIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ABU30687 standard; protein; 569 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (first entry)
                                                                               diagnosis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            prokaryotic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Helicobacter pylori
                                                                                               Sequence 569 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WO200277183-A2
                                                                              detection and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         19-JUN-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Antisense;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          542
          .
8
                                                                                                                                                                                     62
                                                                                                                                                                                                      63
                                                                                                                                                                                                                        122
                                                                                                                                                                                                                                         123
                                                                                                                                                                                                                                                          182
                                                                                                                                                                                                                                                                            183
                                                                                                                                                                                                                                                                                             242
                                                                                                                                                                                                                                                                                                               243
                                                                                                                                                                                                                                                                                                                                302
                                                                                                                                                                                                                                                                                                                                                 303
                                                                                                                                                                                                                                                                                                                                                                  362
                                                                                                                                                                                                                                                                                                                                                                                  363
                                                                                                                                                                                                                                                                                                                                                                                                    422
                                                                                                                                                                                                                                                                                                                                                                                                                      423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ABU30687
          Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                        엄
                                                                                                                                                                                    ò
                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                              원
                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
```

```
the inventor relates to an instance in the relation where expression of the nucleic acid inhibits proliferation of a cell. Also included are:

(I) a vector comprising a promoter operably linked to the nucleic acid encoding a polypeptide whose expression is inhibited by the antisense concorned acid; (2) a host cell containing the vector; (3) an isolated nucleic acid; (2) a host cell containing the vector; (3) an isolated polypeptide or its fragment whose expression is inhibited by the antisense contisense nucleic acid; (4) an antibody capable of specifically binding the polypeptide; (5) producing the polypeptide; (6) inhibiting cellular proliferation or the activity of a gene in an operon required for the polypeptide; (6) inhibiting cellular proliferation; (7) identifying a compound that influences the activity of the gene product or that has an activity against a biological pathway required for proliferation, or that inhibits cellular proliferation; (8) identifying a gene required for cellular proliferation of an organism acts; (9) manufacturing an antibiotic; (10) profiling a compound activity; (11) a culture compound that inhibits proliferation of an organism acts; (9) manufacturing an antibiotic; (10) profiling a compound activity; (11) a culture compound that inhibits the extent or which each of the strains is present in a culture or collection of strains; or (13) identifying the target of a compound that inhibits the critical dentifying proteins or screening for homologous nucleic acids required contained the contained or an organism. The antisense nucleic acids are useful for for cellular proliferation to isolate candidate molecular actional
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     drug discovery programs, or for screening homologous nucleic acids required for proliferation in cells other than S. aureus, S. typhimurium, K. pneumoniae or P. aeruginosa. The present sequence is encoded by one of the target prokaryotic essential genes. Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from WIPO at ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     screening
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITFGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                      Zyskind JW;
Xu HH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             New antisense nucleic acids, useful for identifying proteins or s
for homologous nucleic acids required for cellular proliferation
isolate candidate molecules for rational drug discovery programs.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       invention relates to an isolated nucleic acid comprising any
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 569;
                                                                                                                                                                                                                                                                                                                                                                                                      Ohlsen KL,
Forsyth RA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               76.6%; Score 2297; DB 6; 73.4%; Pred. No. 1.1e-191;
                                                                                                                                                                                                                                                                                                                                                                                                      Haselbeck R,
Yamamoto R,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQ ID NO 58611; 1766pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              76; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                      Malone C,
Carr GJ,
                                                                                                                   2001US-00948993.
2001US-0342923P.
2002US-00072851.
2002US-0362699P.
21-MAR-2002; 2002WO-US009107
                                                                                                                                                                                                                                                                                                                                                                                                          Malone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best Local Similarity 73.49
Matches 416; Conservative
                                                                                                                                                                                                                                                                                                                            (ELIT-) ELITRA PHARM INC.
                                                                                                                                                                                                                                                                                                                                                                                                      Zamudio C,
Trawick JD,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2003-029926/02.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N-PSDB; ACA34557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 569 AA;
```

```
d
                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                               ሯ
                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                  ઠ
                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                 ò
                                                                                                                                                                             8
                                                                                                                                                                                                                          542
                                                                TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361
                                                                                                    SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY 421
                                                                                                                                          SQAMGRVGEVITRTWQTADKNKKEFGRIKEEKGDNDNFRIKRYLSKYTINPA1AHGISEY 422
                                                                                                                                                                    IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH 481
                                                                                                                                                                              :|||| ||:||||:||||||||||| ::||||| || CSVEVGKVADLVLWSPAFFGVKPNMIIKGGFIALSQMGDANASIPTPQPVYYREMFAHH 482
                                                                                                                                                                                                         541
GEGLIVTAGGIDTHIHFISPQQIPTAFASGVTTMIGGGTGPADGTNATTITPGRRNLKWM 182
                                                      VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP 301
                                                                                                                                                                                                                                                                                                                                                                                                                                   533. 567
/note= "Immunogenic region. Region specifically claimed
in claim 14"
                           GKAKPDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                  LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        The invention relates to an isolated nucleic acid molecule encoding hyperimmune serum reactive antigen or its fragment. The composition
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                New hyperimmune serum reactive antigens from Helicobacter pylori, a encoding nucleic acid molecules, useful for diagnosing, preventing treating H. pylori infections.
                                                                                                                                                                                                                                                                                                                                                                                      antibacterial; antigenic; H. pylori infection
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Henics T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQ ID NO 184; 176pp; English
                                                                                                                                                                                                                                             FEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                       : |||||| |||| :: | ||| :: |
YHVFVDGKEVTSKPANKVSLAQLFSIF
                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
                                                                                                                                                                                                                                                                                                              Ä
                                                                                                                                                                                                                                                                                                                                                                  H. pylori antigenic protein HP0072.
                                                                                                                                                                                                                                                                                                             ADU05536 standard; protein; 569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ы
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             22-APR-2004; 2004WO-EP004255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               22-APR-2003; 2003EP-00450097
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nagy
                                                                                                                                                                                                                                                                                                                                                 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Min Bui D,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (INTE-) INTERCELL AG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2004-775908/76.
                                                                                                                                                                                                                                                                                                                                                                                                       Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N-PSDB; ADU05358.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WO2004094467-A2
                                                                                                                                                                                                                                                                                                                                                 27-JAN-2005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          04-NOV-2004.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Meinke A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Claim 14;
                                                                       243
                                   183
                                                                                                            303
                                                                                                                               362
                                                                                                                                                 363
                                                                                                                                                                   422
                                                                                                                                                                                     423
                                                                                                                                                                                                        482
                                                                                                                                                                                                                          483
                                                                                                                                                                                                                                             542
                                                                                                                                                                                                                                                              543
                                                                                                                                                                                                                                                                                                                              ADU05536
123
                                                     242
                                                                                          302
                  182
                                                                                                                                                                                                                                                                                                                                                                                                                                     Region
                                                                                                                                                                                                                                                                                          g
                                                                                                          g
                                                                                                                                             q
                                                                                                                                                                                g
                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                         g
                                  셤
                                                ઠ
                                                                                        ò
                                                                                                                        ò
                                                                                                                                                                 ò
                                                                                                                                                                                                 ò
                ò
```

```
ö
         or antibody) is useful for manufacturing a medicament or pharmaceutical preparation (e.g. a vaccine) for treating or preventing H. pylori infections. The antigen or its fragment may also be used for isolating, purifying and/or identifying an interaction pattner of the hyperimmune serum reactive antigen or fragment; for generating a peptide binding to the hyperimmune serum reactive antigen or fragment, where the peptide is selected from anticalines; for manufacturing a functional nucleic acid selected from aptamers and spiegelmers; or for manufacturing a functional ribonucleic acid selected from ribozymes, antisense nucleic acids and spiedle is selected from ribozymes, antisense nucleic acids and pylori antigenic protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    542
                                                                                                                                                                                                                                                                                                                                                                                         62
                                                                                                                                                                                                                                                                                                                                                        61
(including the nucleic acid molecule, hyperimmune serum-reactive antigen
                                                                                                                                                                                                                                                                                                                                                                               ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTBALA
                                                                                                                                                                                                                                                                                                                                                                                                                                                     SQAMGRVGEVITRTWQTADKNKKEFGRLKEEKGDNDNFRIKRYLSKYTINPAIAHGISEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VOVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SQAMGRAGEVI PRTWQTADKNKKEFGKL.PEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                        2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Urease, beta subunit, UreB, gastric ulcer, peptic ulcer, gastritis, stomach cancer, vaccine, antibody, immune reaction.
                                                                                                                                                                                                                                                                                                                   ;
0
                                                                                                                                                                                                                                                                             Length 569;
                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                             76.6%; Score 2297; DB 8; 73.4%; Pred. No. 1.1e-191; ive 76; Mismatches 75;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              : |||||| :: | ||| :: |
YHVFVDGKEVTSKPANKVSLAQLFSIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protein; 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     H. pylori urease beta subunit.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first entry)
                                                                                                                                                                                                                                                                                                Local Similarity 73.49
des 416; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ADS09177 standard;
                                                                                                                                                                                                                                              Sequence 569 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                16-DEC-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               243
                                                                                                                                                                                                                                                                                                                                                                                                                                  62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ADS09177;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             543
                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                  Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ADS09177
```

```
Helicobacter pylori.

WA JP2004261080-A.

DE JP2004261080-A.

DE JP2004261080-A.

DE JPEE-2003; 2003JP-00054654.

RE 28-FEB-2003; 2003JP-00054654.

RE 28-FEB-2003; 2003JP-00054654.

RE A (FUKL)- DOKUNITSU GYOSEI HOJIN KAGAKU GIJUTSU SH.

RA (FUKL)- DOKUNITSU GYOSEI HOJIN KAGAKU GIJUTSU SH.

RA (FUKL)- DOKUNITSU GYOSEI HOJIN KAGAKU GIJUTSU SH.

RA (FUKL)- DOKUNITSU GYOSEI HOJIN KAGAKU GIJUTSU SH.

RA (FUKL)- DOKUNITSU GYOSEI HOJIN KAGAKU GIJUTSU SH.

RA (FUKL)- FOR DACTERIA BANDA RENSHO KENSA CENT KK.

RA (FUKL)- FOR DACTERIA BANDA RENSHO SENT KK.

RA (FUKL)- FOR DACTERIA BANDA RENSHO SENT KK.

RA (FUKL)- FOR DACTERIA BANDA RENSHO SENT KK.

RA (FUKL)- FOR DACTERIA BANDA RENSHO SENT KK.

RA (FUKL)- FOR DACTERIA BANDA RENSHO SENT KK.

RA (FUKL)- FOR DACTERIA BANDA RENSHO SENT KK.

RA (FUKL)- FOR DACTERIA BANDA BANDA RENGHER PADIOLI GRABE PORTIGIOR BANDA RENGHER PADIOLI GRABE BANDA BANDA RENGHER PADIOLI GRABE BANDA BANDA RENGHER PADIOLI GRABE BANDA BANDA RENGHER PADIOLI GRABE BANDA BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BANDA RENGHER BAN
```

```
122
                                                                                                                                                   241
                                                                                                                                                                                               303 TIPFTVNTEAEHMDMLMVCHHLDKSIKEDVQFADSRIRPQTIAAEDTLHDMGAFSITSSD 362
                                                                                          62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                      GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITFGKWNLHRM 181
                                                                                                                                                                                                                              VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP 301
                                                                                                                                                                                                                                          TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361
                                                                  62
                                             61
                                                                                                      LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                             2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                       ö
Length 568;
                      Indels
                                                                                                                                                                                                        183
                                                                                                                63
                                                                                                                                                            123
                                                                                                                                                                                   182
                                                                                                                                                                                                                              242
                                                                                                                                                                                                                                                                           302
                                                                                                                                      122
                                             ઠે
                                                                 g
                                                                                    õ
                                                                                                           g
                                                                                                                                     à
                                                                                                                                                       g
                                                                                                                                                                                 ò
                                                                                                                                                                                                     셤
                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                           8
```

```
The sequence of the Helicobacter felis urease ureB gene product (given in AAR67371) was compared to ureases of Helicobacter pylori (AAR67378), Proteus mirabilis (AAR67379) and jack bean urease (AAR67380) and regions of homology were identified. (Updated on 25-MAR-2003 to correct PN
542
                                              481
                                                                                           541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 from Helicobacter pylori and Helicobacter felis - used to develop
1s. for detection, treatment and prevention of Helicobacter infection.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62
                                                                                                     Urease; ureB gene; immunogen; vaccine; diagnostic; Helicobacter felis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GKAKFDISITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 569;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                77; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           76.1%; Score 2281; DB 2; 73.0%; Pred. No. 2.7e-190; ive 76; Mismatches 77;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ferrero R, Thiberge J;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (INSP ) INST PASTEUR.
(INRM ) INST NAT SANTE & RECH MEDICALE
                                                                                                                                       FEVFVDGKLCTSKPTSQVPLAQRYT 566
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Disclosure; Fig 4iv-x; 168pp; English.
                                                                                                                                                      : |||||| |||| ::| ||| ::
YHVFVDGKEVTSKPANKVSLAQLFS
                                                                                                                                                                                                                       AAR67378 standard; protein; 569
                                                                                                                                                                                                                                                                                                                                                                                                                     94WO-EP001625
                                                                                                                                                                                                                                                                                                                                                                                                                                          93EP-00401309
93WO-EP003259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Suerbaum S,
                                                                                                                                                                                                                                                                     (revised)
                                                                                                                                                                                                                                                                                                    H. pylori urease ureB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 1995-006797/01.
                                                                                                                                                                                                                                                                                                                                                  Helicobacter pylori.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local Similarity
Matches 414; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 569 AA;
                                                                                                                                                                                                                                                                                                                                                                        WO9426901-A1
                                                                                                                                                                                                                                                                                                                                                                                                                    19-MAY-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                          19-MAY-1993;
19-NOV-1993;
                                                                                                                                                                                                                                                                  25-MAR-2003
22-JUN-1995
                                                                                                                                                                                                                                                                                                                                                                                               24-NOV-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Labigne A,
                                                422
                                                                                            482
                                                                                                                                         542
                                                                                                                                                              543
                                                                                                                                                                                                                                             AAR67378;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        prods.
                                                                                                                                                                                                 RESULT 13
                                                                                                                                                                                                             AAR67378
                                                                                                                                                                                                                        g
                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          용
                    ద
                                                ઠ
                                                                                        ઠે
                                                                                                                                         ठ
                                                                                                                                                        පි
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
```

```
The invention relates to inducing an immune response against Helicobacter in a mammal, comprising mucosally administering to the mammal an attenuated Salmonella vector containing a nucleic acid molecule encoding
                                                                                                                                                                                                                                   482
                                                                                                                                                                                                                                                        541
                                                                                                                                                                                                                                                                            542
                                                              242
                                                                                   301
                                                                                                                             361
                                                                                                                                               362
                                                                                                                                                                     421
                                                                                                                                                                                         422
                                                                                                                                                                                                               481
GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKMNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             an immune response against Helicobacter in mammals, useful for Helicobacter induced gastroduodenal diseases.
                                                    VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILBSSTTP
                                                                                             SQAMGRVGEVITRIWQTADKXKKEFGRLKEEKGDNDNFRIKRYLSKYTINPAIAHGISEY
                                         LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                          TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                     SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                              IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                      GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                          pHUR3; vaccine; helicobacter pylori infection; urease; immune stimulation; antibacterial; Immunostimulant; antiulcer; cytostatic; antiinflammatory; gastrointestinal-gen.; gastritis;
                                                                                                                                                                                                                                                                                                                                                                                                                                      Hylicobacter pylori Urase B protein fragment SEQ ID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Freeman
                                                                                                                                                                                                                                                                                                FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              English.
                                                                                                                                                                                                                                                                                                            Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Londono-Arcila P,
                                                                                                                                                                                                                                                                                                                                                                       AEB55116 standard; protein; 570
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ID NO 5; 63pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-NOV-2000; 2000WO-US030191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99US-00431705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N-PSDB; AEB55112, AEB55130.
                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           peptic ulcer; carcinoma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2001-343379/36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (ORAV-) ORAVAX INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Disclosure; SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO200132014-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Kleanthous H,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-NOV-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                  22-SEP-2005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        10-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Inducing treating
                                                                                                                                                                                                                                                                                                542
                                                                                                      243
                                                                                                                                                                                                              422
                                                                                                                                                                                                                                  423
                                                                                                                                                                                                                                                                                                                    543
                                         182
                                                            183
                                                                                  242
                                                                                                                            302
                                                                                                                                               303
                                                                                                                                                                                         363
                                                                                                                                                                                                                                                      482
                                                                                                                                                                                                                                                                           483
                                                                                                                                                                                                                                                                                                                                                                                             AEB55116
122
                    123
                                                                                                                                                                    362
                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                   g
                                                                                                                                          g
                                                                                                                                                                                     g
                                                                                                                                                                                                                              qq
                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                               g
                                                      임
                                                                                8
                                                                                                                        ઠે
                                                                                                                                                                  ò
                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                    ò
ð
                                       ò
```

```
Helicobacter antigen, and parenterally administering to the mammal a Helicobacter antigen. Also included is an attenuated Salmonella vector comprising a nucleic acid molecule encoding a Helicobacter antigen. The Helicobacter antigen is a urease, a urease subunit, or its immunogenic fragment (encoded by the ureA and ureB genes). The mammal is at risk of having but does not have Helicobacter infection or has a Helicobacter infection. The attenuated Salmonella vector further comprises an htrA or nir bromoter. The vector and be used in inducing an immune response against Helicobacter in a mammal. The vector can be used to treat Helicobacter infection. The vector and the method can be used to treat Helicobacter induced gastroducdenal diseases, including acute, chronic carrophic gastric carcinoma. Attenuated Salmonella vector pHUR3 was constructed expressing UreA and UreB and including an E. Coli AmpR gene. The present sequence represented by both ABBS5112 and ABBS5112 and ABBS512 and ABBS512 and ABBS513, where peptides being to be split between ABBS512 and ABBS513, yet Figure 4 shows all the peptides being expressed by the one sequence, therefore all encoded peptides are cross-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITWAGELNILPSSTTP 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SQAMGRAGEVIPRTWQTADKUKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TIPFTVNTEAEHMDMLMVCHHLDKSIKEDVQFADSRIRPQTIAAEDTLHDMGIFSITSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOAMGRVGEVITRIMOTADKNKKEFGRLKEEKGDNDNFRIKRYLSKYTINPAIAHGISEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                        KWKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ENTLDLVITNAMI I DYTGI YKADI GI KNGKI HGI GKAGNKDMQDGVS PHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                        .
0
                                                                                                                                                                                                                                                                                                                                                                                     Length 570;
                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                    76.1%; Score 2281; DB 4;
73.0%; Pred. No. 2.7e-190;
live 76; Mismatches 77;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            : ||||| |||| :: | ||| :: |
YHVFVDGKEVTSKPANKVSLAQLFSIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                          referenced to both sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                        Sequence 570 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                      414;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          544
                                                                                                                                                                                                                                                                                                                                                                                                        Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 15
AAR74337
ID AAR74
XX
AC AAR74
        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ရ
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠ
```

Ź

AAR74337 standard; protein; 569

AAR74337

```
Immunogenic composition against Helicobacter infection - also gene fragment(s) and protein(s) from Helicobacter urease gene cluster and heat shock protein(s).
                                                                                                                                                                                                                      UreA; UreB; vaccine; Helicobacter infection; UreI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              & RECH MEDICALE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ferrero R;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Claim 10; Fig 3; 128pp; English.
                                                                                                                                             Helicobacter felis urease UreB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       93WO-EP003259,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   93WO-EP003259
                                  (revised)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Labigne A, Suerbaum S,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (INSP ) INST PASTEUR.
(INRM ) INST NAT SANTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WPI; 1995-200383/26
                                                                                                                                                                                                                                                            heat shock protein.
                                                                                                                                                                                                                                                                                                                                 Helicobacter felis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  N-PSDB; AAQ90180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 569 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           19-NOV-1993;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   19-NOV-1993;
                                                                                                                                                                                                                                                                                                                                                                                                         WO9514093-A1
                                  25-MAR-2003
02-NOV-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              26-MAY-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
NAME OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY
```

ô The urease UreB protein is a component of a novel immunogenic composition capable of inducing protective antibodies against Helicobacter infection. The composition may include the UreA protein (AAR74336), a ureaseassociated heat shock protein (AAR7438-39) or the UreI protein (AAR74340). The composition is used to prepare a vaccine for humans or animals, especially against H. pylori and H. felia. Antibodies against the proteins may be used for treating Helicobacter infection, and primers/probes to the DNA sequence may be used for detection of Helicobacter infection. (Updated on 25-MAR-2003 to correct PN field.) 241 301 243 VQVAIHTDTLNEAGCVEDTLEAIAGRTIHTFHTEGAGGGHAPDVIKWAGEFNILPASTNP 302 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121 GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181 TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361 61 62 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD LRAABEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP Gaps ö Length 569; 85; Indels 74.8%; Score 2244; DB 2; Local Similarity 72.5%; Pred. No. 4.7e-187; les 411; Conservative 71; Mismatches 85; 62 63 123 183 242 303 122 182 302

> 셤 ò 임 ò 요 Š 임

δ

8 %

à

```
Sequence 3, Appli
Sequence 15, Appli
Sequence 12, Appli
Sequence 9, Appli
Sequence 9, Appli
Sequence 38, Appli
Sequence 252, Appli
Sequence 8611, Appli
Sequence 40, Appli
Sequence 40, Appli
Sequence 39, Appli
Sequence 41, Appli
Sequence 41, Appli
Sequence 41, Appli
Sequence 41, Appli
                                                                                                                                                                           ; Search time 160.242 Seconds (without alignments) 1481.056 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence seduence sed
                                                                                                                                                                                                                                                                                                  US-09-904-994B-3
2999
1 MKWKKQEYVNTYGPTKGDKV......KLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Published Applications AA Main:*

(cgn2_6/ptodata/1/pubpaa/USO7_PUBCOMB.pep:*

(cgn2_6/ptodata/1/pubpaa/USO8_PUBCOMB.pep:*
(cgn2_6/ptodata/1/pubpaa/USO9_PUBCOMB.pep:*
(cgn2_6/ptodata/1/pubpaa/USO3_PUBCOMB.pep:*
(cgn2_6/ptodata/1/pubpaa/USIOB_PUBCOMB.pep:*
(cgn2_6/ptodata/1/pubpaa/USIOB_PUBCOMB.pep:*
GenCore version 5.1.6
(c) 1993 - 2005 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-904-994B-3
US-09-904-994B-15
US-09-904-994B-6
US-09-904-994B-9
US-10-639-273-38
US-10-639-273-38
US-10-639-273-38
US-10-639-273-49
US-10-282-122A-58611
US-10-282-122A-58611
US-10-282-122A-49763
US-10-282-122A-49766
US-10-282-122A-49766
US-10-282-122A-60134
US-10-282-122A-60134
US-10-282-122A-69134
US-10-282-122A-69134
US-10-282-122A-69134
US-10-282-122A-69134
US-10-282-122A-69134
US-10-282-122A-69134
US-10-282-122A-69134
US-10-282-122A-69134
US-10-282-122A-68414
US-10-282-122A-56844
US-10-282-122A-56844
US-10-282-122A-56844
US-10-282-122A-56844
US-10-282-122A-56855
US-10-282-122A-56844
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1867569 seqs, 417829326 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                               2005, 08:11:38
                                                                                                                      using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                            BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query
Match Length
                                                                                                                      - protein search,
                                                                                                                                                                                  November 28,
                            Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .........
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Post-processing:
                                                                                                                                                                                                                                                                                                     Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                            Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2999
2943
2943
2950
2950
2950
2297
2297
2297
2297
2297
2104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1922
1914
1914
1897
1832
1825
1818
1818
1809
1809
1809
                                                                                                                         OM protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Searched:
                                                                                                                                                                                                                                                                                                                                                                       Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Database
                                                                                                                                                                                     о
П
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Result
                                                                                                                                                                                     Run
```

Sequence 70574, A Sequence 6526, Ap Sequence 44443, A Sequence 7, Appli Sequence 1, Appli Sequence 1, Appli Sequence 124057, Sequence 2, Appli Sequence 2, Appli Sequence 51072, A Sequence 65832, A Sequence 65832, A Sequence 6417, A Sequence 14635, A Sequence 6417, A Sequence 16552,			Length 568; Indels 0; Gaps 0;	CFGAGKTIREGMGQSNSP 60 FGAGKTIREGMGQSNSP 60	GKAGNKDMQDGVSPHMVVGVGTEAL 120	TDGTNATTITPGKWNLHR 180 TDGTNATTITPGKWNLHR 180	GTTPSAIDHCLSVADEY 240 	POVITMAGELNILPSSTT 300	AAEDVLHDMGVIAMTSS 360	YYISKYTINPALTHGVSE 420
US-10-282-122A-70574 US-10-724-972A-6526 US-10-282-122A-44443 US-10-821-122A-44443 US-10-821-122A-78027 US-10-621-833-7 US-10-731-877-1 US-10-731-877-1 US-10-731-877-1 US-10-437-963-124057 US-10-418-962-2 US-10-418-962-2 US-10-282-122A-5192 US-10-282-122A-64617 US-10-282-122A-64617 US-10-282-122A-64617 US-10-282-122A-64617 US-10-282-122A-64617 US-10-282-122A-64617 US-10-282-122A-64617 US-10-282-122A-64617 US-10-385-977-8610	ALIGNMENTS	04994B 1 5325Alel N.V. ter vaccine ties 5/09/904,994B -13	Score 2999; DB 3; Pred. No. 1.4e-258; 0; Mismatches 0;	MKMKKQEYVNTYGPTKGDKVRLGDTDLMAEVEHDYTTYGEELKFGAGKTIREGMGOSNS: 	31YKADIGIRNGKIHGIGKAGNKD) 	AGEGMIITAGGIDSHTHFLSPQQPPTALANGVTTMFGGGTGPVDGTNATTITPGKMNLHR 	MLRAABEYSMYVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTP: 	DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITWAGELNILP! 	PTI PYTINTVAEHLDMLATCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTS! 	DSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNPRIKRYISKYTINPALTHGVSE
59.7 59.6 59.7 59.7 58.5 58.5 58.5 58.5 58.3 56.6 56.6 58.3 56.4 56.4 56.4 57.2 56.4 57.2 56.4 57.2 57.2 56.4 57.2 57.2 57.2 57.2 57.2 57.2 57.2 57.3 57.3 57.2 57.3		plication US/099 US20040005325A ATION. ZO NO. US2004000 NTION: Helicobac B: Degoedesequen CATION NUMBER: U G DATE: 2001-07 ID NOS: 21 entin Ver. 2.1	100.0%; imilarity 100.0%; ; Conservative	KMKKQEYVNTYGPTKGDI KMKKQEYVNTYGPTKGDI	DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGI 	AGEGMIITAGGIDSHTHFI AGEGMIITAGGIDSHTHFI	alraaeeysmnygfigkgi 	OVQVCIHTDTVNEAGYVDI 	PTI PYTINTVAEHLDMLM: 	DSQAMGRAGEVIPRTWQT1 DSQAMGRAGEVIPRTWQT1
28 1789.5 29 1788.5 30 1784.5 31 1779.5 32 1753.5 33 1753.5 34 1753.5 36 176 37 1699.5 39 1691 40 1691 41 1610 42 1610 43 14615 44 1241.5		RESULT 1 US-09-904-994B-3 US-09-904-994B-3 Sequence 3, Ap Publication No GENERAL INFORM APPLICANT: AR TITLE OF INVE FILE REPRENC CURRENT APPLI CURRENT APPLI CURRENT FILIN NUMBER OF SEQ SOFTWARE: Pat SEQ ID NO 3 LENGTH: 568 TENGTH: 568 TENGTH: 568 TENGTH: 568 TENGTH: 568 TENGTH: 568 US-09-904-994B-3	Query Match Best Local Sim: Matches 568;	Qy 1 N	Oy 61 I	Oy 121 P	Oy 181 N	Qy 241 I	Oy 301 I	Oy 361 [Db 361 [
										<u> </u>

a a

g õ 셤

ò

```
120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61 DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PII PYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301 PIIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDIGVIAMTSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MKMKKQEYVNTYGPTTGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121 AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121 AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKMNLHR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181 MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181 MLRAAEEYSMNVGFIGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTFSAIDHCLSVADEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DVQVCIHTDTVNBAGYVDDTLNAMNGRAIHAYHIBGAGGGHSPDVITWAGELNILPSSTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            361 DSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGADNDNFRIKRYISKYTINPALTHGVSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               421 YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         HGKAKFDTS1TFVSKVAYENGVKEKLGLERQVLPVKNCRN1TKKDFKFNDKTAK1TVDPK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match 98.7%; Score 2960; DB 3; Length 568; Best Local Similarity 98.6%; Pred. No. 4.2e-255; Matches 560; Conservative 4; Mismatches 4; Indels
  541 TFEVFVDGKLCTSKPTSEVPLAQRYTFF 568
                                                                                                                                                                APPLICANT: AKZO NO. US20040005325A1e1 N.V. TITLE OF INVENTION: Helicobacter vaccine FILE REFERENCE: Degoedesequenties CURRENT APPLICATION NUMBER: US/09/904,994B CURRENT FILING DATE: 2011-07-13 NUMBER OF SEQ ID NOS: 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 12, Application US/09904994B
; Publication No. US20040005325A1
; GENERAL INFORMATION:
APPLICANT: ARZO No. US20040005325A1e1 N.V.
; TITLE OF INVENTION: Helicobacter vaccine
                                                                                                     Sequence 6, Application US/09904994B Publication No. US20040005325A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM: Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-904-994B-12
                                                                                     US-09-904-994B-6
                                                                                                                                                                                                                                                                                                                                                                                                           US-09-904-994B-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    361
                                                                                                                                                                                                                                                                                                                       SEQ ID NO 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઢ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 540
                                                                                                                             540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKMNLHR 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSE 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPK 540
                                                                                     540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITWAGELNILPSSTT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DSQAMGRAGEVIPRIWQTADKNKKEFGKLPEDGADNDNFRIKRYISKYTINPALTHGVSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421 YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGWVVFSEMGDSNASVPTPQPVYYREMFGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HGKAKFDTSITFVSKVAYENGVKEKLGLERKVLPVKNCRNITKKDFKFNDKTAKITVDPK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DVQVCIHTDTVNEAGYVDDTLANAMGRAIHAYHIEGAGGGHSPDVITWAGEVNILPSSTT
                                                                                                       481 HGKAKFDTSITFVSKVAYENGVKEKLGLERQVL,PVKNCRNITKKDFKFNDKTAKITVDPK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MLRAABEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
421 YIGSVEEGKIADLUVWNPAFFGUKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH
                        421 YIGSVEEGKIADLUVWNPAFFGUKPKIVIKGGMUVFSEMGDSNASUPIPQPUYYREMFGH
                                                                                   HGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGOSNSP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 2973; DB 3;
Pred. No. 2.9e-256;
4; Mismatches 2;
                                                                                                                                                                                                                                                                                                                 Sequence 15, Application US/09904994B
Publication No. US20040005325A1
GENERAL INFORMATION:
TITLE OF INVENTION: Helicobacter vaccine
FILE REFERENCE: Degoedsequenties
CURRENT FILING DATE: 2001-07-13
NUMBER OF SEQ ID NOS: 21
SOFTWARE: PatentIn Ver. 2.1
SOFTWARE: 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TFEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                            Query Match 99.1%;
Best Local Similarity 98.9%;
Matches 562; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: PRT
ORGANISM: Helicobacter felis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-904-994B-15
                                                                                                                                                                                                                                                                                               -09-904-994B-15
                                                                                                                                                                    541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               481
                                                                                   481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           541
```

셤

g ò g ò

В

ò 셤 ઠે

ብ *አ*

g

ò

ద ò 셤 ઠે

ò

ö

```
US-10-639-273-5
                                                                                                                              61
                                                                                                                                                         61
                                                                                                                                                                                      121
                                                                                                                                                                                                                121
                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                           301
                                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                 361
                                                                                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: PRT
                                                                                                                              ò
                                                                                                                                                                                     ò
                                                                                                                                                                                                             d
                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   d
                                                                                                                                                                                                                                                                                                                                               421 YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGNVVFSEMGDSNASVPTPQPVYYREMFGH 480
                                                                                                                                                                                                                                                                         DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL 120
                                                                                                                                                                                                                                                                                           61 DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL 120
                                                                                                                                                                                                                                                                                                                                 121 AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHR 180
                                                                                                                                                                                                                                                                                                                                                                                                                                              DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITWAGELNILPSSTT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSE 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DSQAMGRAGEVIPRIMOTADKNKKEFGKLPEDSADNDNFRIKRYISKYTINPALTHGVSE 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HGKAKFDISITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPK 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                            9
                                                                                                                                                                                                                                            1 MKMKKQEYVNTYGPTTGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                                                                                                                                                1 MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                                                                                                                                                                                                                                                                                                                       MLRAAEEYSMNVGFLGKGNSSSKKOLVEOVEAGA I GFKLHEDWGTTPSA I DHCLSVADEY
                                                                                                                                                                                       Gaps
                                                                                                                                                                                      ;
0
                                                                                                                                                            Length 568;
                                                                                                                                                                                      5; Indels
                                                                                                                                                         Score 2953; DB 3;
Pred. No. 1.8e-254;
5; Mismatches 5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 9, Application US/09904994B; Publication No. US20040065325A1; GENERAL INFORMATION:
APPLICANT: AKZO No. US20040005325A1e1 N.V.; TITLE OF INVENTION: Helicobacter vaccine; FILE REFERENCE: Degoedesequenties; CURRENT APPLICATION WUMBER: US/09/904,994B; CURRENT FILING DATE: 201-07-13
NUMBER OF SEQ ID NOS: 21; SOFTWARE: Patentin Ver. 2.1; SEQ ID NO 9
IENGTH: 496
TYPE: RT
CURRANISM: Helicobacter felis
US-09-904-9948-9
; FILE REFERENCE: Degoedesequenties; CURRENT APPLICATION NUMBER: US/09/904,994B; CURRENT FILING DATE: 2001-07-13; NUMBER OF SEQ ID NOS: 21; SEQ ID NO 12; SEQ ID NO 12; ENGTH: 568; TYPE: PRT ORGANISM: Helicobacter felis US-09-904-994B-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  541 TFEVFVDGKLCTSKPASEVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  541 TFEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                          98.5%;
                                                                                                                                                         Query Match
Best Local Similarity 98.21
Matches 558; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 5
US-09-904-994B-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                   ઠ
                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                               임
                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
```

```
240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSE 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     480
                                                                                                                                                                                                                        DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL 120
                                                                                                                                                                                                                                                                                       AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHR 180
                                                                                                                                                                                                                                                                                                                                                                                                                               240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Chang, Yung-Fu
APPLICANT: Chang, Yung-Fu
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Zhu, Jiaqian II
APPLICANT: Zhu, Jiaqian II
APPLICANT: Zhu, Jiaqian II
APPLICANT: Zhu, Jiaqian II
APPLICANTON: HELICOBACTER BIZZOZERONII UREASE GENES AND THEIR USES
TITLE OF INVENTION: IN DIAGNOSTIC AND TREATMENT METHODS
FILE REFERENCE: 19603/381
CURRENT APPLICATION NUMBER: US/10/639,273
FRIOR APPLICATION NUMBER: 60/404,337
PRIOR PILING DATE: 2002-08-16
NUMBER OF SEQ ID NOS: 41
                                                                                                                                                                                           DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL
                                                                                              1 MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                                                            1 MKMKKQEYVNTYGPTTGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                                                                                                                                                                                                                                                                                                                    MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                                                                                                                                                                                                                                                                                                              YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                   Gaps
                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
Score 2588; DB 3; Length 496;
Pred. No. 5.8e-222;
1; Mismatches 2; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match 77.6%; Score 2326; DB 4; Length 569; Best Local Similarity 74.1%; Pred. No. 1.8e-198; Matches 420; Conservative 75; Mismatches 72; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                , ORGANISM: Helicobacter bizzozeronii
US-10-639-273-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; Sequence 5, Application US/10639273; Publication No. US20040142343A1; GENERAL INFORMATION:
  86.3%;
       Query Match
Best Local Similarity 99.4
Matches 489; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HGKAKFDTSITF 492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 5
```

```
APPLICANT: Al-Garawi, Amal APPLICANT: Al-Garawi, Amal APPLICANT: Al-Garawi, Amal APPLICANT: Al-Garawi, Amal APPLICANT: Al-Garawi, Amal APPLICANT: Miler, Charles APPLICANT: Miler, Charles APPLICANT: Tomb, Jean Francois APPLICANT: Oomen, Raymond P. TITLE OF INVENTION: Identification of Polynucleotides TITLE OF INVENTION: Encoding No. US20020160456Alel Helicobacter Polypeptides in the TITLE OF INVENTION: Genome TITLE OF INVENTION: Genome TITLE OF INVENTION: Genome CURRENT APPLICATION NUMBER: US/09/895,913A CURRENT FILING DATE: 2001-06-29 PRIOR FILING DATE: 2001-06-29 PRIOR FILING DATE: 197-06-24 NUMBER OF SEQ ID NOS: 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                      541
361
                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                         421
                                                                                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                                                                                                                                                                                                481
                                                                                                                                                                                                                                                                                                                                                                                                                     541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       122 GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                243 VQVAIHTDTLNEAGCVEDTLEAIAGRTIHTFHTEGAGGGHAPDVIKMAGEFNILPASTNP
                                                                                                                                                                                                                     482 GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                      482 GKAKFDTNITFVSQVAYENGIKHELGLQRVVLPVKNCRNITKKDLKFNDVTAHIEVNPET
                                                       LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                              242 VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITWAGELNILPSSTTP
                                                                                                                                                                                                   302 TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                            362 SQAMGRVGEVITRIWQTADKNKKEFGRLPEEKGDNDNFRIKRYISKYTINPAITHGISEY
                                                                                                                                                                                                                                                                                                                                                                   2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                         362 SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                              422 IGSVEEGKIADLUVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match 76.6%; Score 2297; DB 3; Length 569; Best Local Similarity 73.4%; Pred. No. 7.2e-196; Matches 416; Conservative 76; Mismatches 75; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                542 YKVKVDGNEVTSHAADKLSLAQLYNLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            542 FEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; Sequence 252, Application US/09895913A ; Patent No. US20020160456A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM: Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-895-913A-252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-895-913A-252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQ ID NO 252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                          요
                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                 셤
                                                                                                                                                        셤
                                                                                                                                                                                                     8
                                                     ò
                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
     121
                                                                        GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                           LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD 241
                                                                                                                                                               VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGHSPDVITMAGELNILPSSTTP 301
                                                                                                                                                                                                                                        243 VQVAIHTDTLNEAGCVEDTLQAIAGRTIHTFHTEGAGGGHAPDVIKMSGEFNILPASTNP 302
                                                                                                                                                                                                                                                                                          TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361
                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                                   363 SQAMGRVGEVITRTWQTADKNKKEFGRLPEEKGDNDNFRIKRYISKYTINPAIAHGISEY 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                        GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SHELDLVITNALIVDYTGIYKADIGIKNGKIHGIGKAGNKDLQDGVCNRLCVGPATEALA 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GEGMIITAGGIDSHTHFLSPQQPPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
APPLICANT: Chang, Yung-Fu
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Zhu, Jiaqian
TITLE OF INVENTION: HELICOBACTER BIZZOZERONII UREASE GENES AND THEIR USES
TITLE OF INVENTION: 1N DIAGNOSTIC AND TREATMENT METHODS
TITLE OF INVENTION: 1N DIAGNOSTIC AND TREATMENT METHODS
CURRENT APPLICATION NUMBER: US/10/639,273
CURRENT FILING DATE: 2003-08-12
PRIOR FILING DATE: 2003-08-16
NUMBER OF SEQ ID NOS: 11
SOFTWARE: PALENTIN VET: 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                      SHELDLVLTNALIVDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVCNNLCVGPATEALA
                                                                                                                                                                                                                                                                                                                                                                                                                                      IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
   62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                                                 SQAMGRAGEVI PRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ï
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 4; Length 568;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          76.6%; Score 2298.5; DB 4;
llarity 73.7%; Pred. No. 5.3e-196;
Conservative 74; Mismatches 74;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 38, Application US/10639273
Publication No. US20040142343A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: PRT () ORGANISM: Helicobacter heilmannii US-10-639-273-38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SOFTWARE: Pate
SEQ ID NO 38
LENGTH: 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-639-273-38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ~
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ო
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122
                                                                                                                                                                                                                    242
                                                                                                                                             182
                                                                                                                                                                                                                                                                                                                                                                                                                                      422
                                                                        122
                                                                                                                                                                                                                                                                                          302
                                                                                                                                                                                                                                                                                                                            303
                                                                                                                                                                                                                                                                                                                                                               362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                             ठे
                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ሯ
                             g
                                                                      8 8
                                                                                                                                  ठे
                                                                                                                                                                         유
                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
```

62

241 242 301 361 362 422

421

482

481

542

ò a ò 요 ò g ò 셤

ò 요 셤

ò

셤

ò

```
GEGMITTAGGIDSHTHFLSPQOFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                                                                     303 TIPFTVNTEAEHMDMLMVCHHLDKSIKEDVQFADSRIRPQTIAAEDTLHDMGIFSITSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LRAAEEYSMIVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2 KMKKQEYVNTYGPIKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOAMGRAGEVIPRTWOTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                 .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 10
US-10-315-977-8611
i Sequence 8611, Application US/10335977
j Publication No. US2004005279941
j GENERAL INFORMATION:
    APPLICANT: DOUGLAS SMITH et al
    TITLE OF INVENTION:
    RELATING TO HELICOBACTER PYLORI FOR
    DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                             Length 569;
                                                                                                                                                               76.6%; Score 2297; DB 4; 73.4%; Pred. No. 7.2e-196;
                                                                                                                                                                                                              76; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ZIP: 02109-1875
COMPUTER READABLE FORM:
MEDIUM TYPE: CD/ROM ISO9660
COMPUTER: IB PC Compatible
OPERATING SYSTEM: Windows NT 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  & COCKFIELD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            : |||||| |||| ::| ||| ::|
543 YHVFVDGKEVTSKPANKVSLAQLFSIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQUENCES: 10031
CORRESPONDENCE ADDRESS:
ADDRESSEB: LAHIVE & COCKF
STREET: 28 State Street
CITY: Boston
STATE: Massachusetts
SOFTWARE: PatentIn version 3.1
SEQ ID NO 58611
LENGTH: 569
                                                                                             pylori
                                                                                                                                                             Query Match
Best Local Similarity 73.44
Matches 416; Conservative
                                                                    TYPE: PRT
ORGANISM: Helicobacter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COUNTRY: USA
                                                                                                                   US-10-282-122A-58611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   242
                                                                                                                                                                                                                                                                                                                                                                                                                                                        122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 10
                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               쉱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Forsyth, R.
APPLICANT: Xu, H.
APPLICANT: Xu, H.
APPLICANT: Xu, H.
TITLE OF INVENTION: Identification of Essential Genes in Microorganisms FILE OF INVENTION: Identification of Essential Genes in Microorganisms FILE REFERENCE: ELITRA.034A
CURRENT PILIONG DATE: 2003-02-20
FRIOR PPLICATION NUMBER: 60/191,078
FRIOR APPLICATION NUMBER: 60/206,848
FRIOR APPLICATION NUMBER: 60/207,727
FRIOR APPLICATION NUMBER: 60/207,727
FRIOR APPLICATION NUMBER: 60/230,335
FRIOR FILING DATE: 2000-09-06
FRIOR FILING DATE: 2000-09-06
FRIOR FILING DATE: 2000-09-06
FRIOR FILING DATE: 2000-10-23
FRIOR APPLICATION NUMBER: 60/230,347
FRIOR APPLICATION NUMBER: 60/242,578
FRIOR APPLICATION NUMBER: 60/242,578
FRIOR FILING DATE: 2000-11-27
FRIOR FILING DATE: 2000-11-27
FRIOR FILING DATE: 2000-11-27
FRIOR FILING DATE: 2000-10-29
FRIOR FILING DATE: 2000-10-29
FRIOR FILING DATE: 2001-02-09
FRIOR FILING DATE: 2001-02-09
FRIOR FILING DATE: 2001-02-09
FRIOR FILING DATE: 2001-02-09
FRIOR FILING DATE: 2001-02-09
FRIOR FILING DATE: 2001-02-09
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING DATE: 2001-02-06
FRIOR FILING FILING DATE: 2001-02-06
FRIOR FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING FILING F
                                                                                                                                                                                                                                                                                                                                    542
                                                                                                                      301
                                                                                                                                                               302
                                                                                                                                                                                                                 TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361
                                                                                                                                                                                                                                                               362
                                                                                                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                                                                                                                                           481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         541
                                                   243 VQVAIHTDTLNEAGCVEDTWAAIAGRTWHTFHTEGAGGGHAPDIIKVAGEHNILPASTNP
                                                                                                                                                                                                                                         LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADBYD
                                                                                                                      VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYH1EGAGGGHSPDVITMAGELN1LPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                           IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                              SOAMGRAGEVIPRTWOTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 58611, Application US/10282122A Publication No. US20040029129A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Wang, Liangsu
APPLICANT: Zamudio, Carlos
APPLICANT: Malone, Cheryl
APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Kari
APPLICANT: Zyskind, Judith
APPLICANT: Wall, Daniel
APPLICANT: Trawick, John
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Carr, Grant
Yamamoto, Robert
Forsyth, R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GENERAL INFORMATION:
                                                                       183
                                                                                                                   242
                                                                                                                                                                                                                 302
                                                                                                                                                                                                                                                               303
                                                                                                                                                                                                                                                                                                                                                        363
                                                                                                                                                                                                                                                                                                                                                                                                         422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                543
                        182
                                                                                                                                                                                                                                                                                                              362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
```

```
Sequence 40, Application US/10639273

Publication No. US200401423431

Publication No. US200401423431

Sequence 40, Application No. US200401423431

APPLICANT NORMATION:

APPLICANT: Simpson, Kenneth W

APPLICANT: Simpson, Kenneth W

APPLICANT: Simpson, Kenneth W

APPLICANT: Simpson, Kenneth W

APPLICANT: Simpson, Kenneth W

APPLICANT: Simpson, Kenneth W

APPLICANT: Simpson, Kenneth W

FILE REPREBENCE: 19603/3881

CURRENT ELLO PALICATION NUMBER: US/10/639,273

CURRENT FILING DATE: 2003-08-12

PRIOR FILING DATE: 2003-08-12

PRIOR FILING DATE: 2002-08-16

NUMBER OF SEQ ID NOS: 41

SOFTWARE: Patentin Ver. 2.1

SEQ ID NO 40

LENGTH: 569

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

TYPE: PRI

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              122 GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITFGKWNLHRM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          183 LRAAEEYSMNLGFLAKGNASNDASLADQIEAGAIGFKIHEDWGTTPSAINHALDVADKYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      242 VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  243 VQVAIHTDTLNEAGCVEDTWAAIAGRTWHTFHTEGAGGGHAPDIIKVAGEHNILPASTNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             303 TIPFTVNTEAEHMDMLMVCHHLDKSIKEDVQFADSRIRPQTIAAEDTLHDMGIFSITSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     363 SQAMGRVGEVITRTWQTADKNKKEFGRLKEEKGDNDNPRIKRYLSKYTINPAIAHGISEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SQAMGRAGEVI PRTWQTADKNKKEFGKL PEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match 76.6%; Score 2297; DB 4; Best Local Similarity 73.4%; Pred. No. 7.2e-196; Matches 416; Conservative 76; Mismatches 75;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     : |||||| |||| ::| ||| ::|
YHVFVDGKEVTSKPANKVSLAQLFSIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-10-639-273-39
; Sequence 39, Application US/10639273
; Publication No. US20040142343A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; ORGANISM: Helicobacter pylori
US-10-639-273-40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SQAMGRVGEVITRIWQTADKONKKEFGRLKEEKGDNDNFRIKRYLSKYTINPALAHGISEY 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKMNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         243 VQVAIHTDTLNEAGCVEDTMAAIAGRTWHTFHTEGAGGGHAPDIIKVAGEHNILPASTNP 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3 KISRKEYVSMYGPTTGDKVRLGDTDLIAEVEHDYTIYGEELKFGGGGKTLREGMSQSNNPS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 569;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match 76.6%; Score 2297; DB 4; Best Local Similarity 73.4%; Pred. No. 7.2e-196; Matches 416; Conservative 76; Mismatches 75;
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/10/335,977
FILING DATE: 30-Dec-2002
PRIOR APPLICATION DATA:
APPLICATION DATA:
APPLICATION DATA: 08/93,002
FILING DATE: 17-DEC-1997
ATTORNEY/AGENT INFORMATION:
NAME: MAGNE: MANY E.
REGISTRATION NUMBER: 36,207
REFERENCE/DOCKET NUMBER: GTN-018
TELEPHONE: (617)227-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
TELEPHONE: (617)727-7400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME/KEY: misc_feature; LOCATION: (B) LOCATION 1...569; SEQUENCE DESCRIPTION: SEQ ID NO: 8611: US-10-335-977-8611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            : |||||| ||||| ::| ||| ::|
YHVFVDGKEVTSKPANKVSLAQLFSIF 569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORGANISM: Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MOLECULE TYPE: protein
HYPOTHETICAL: YES
ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ~
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
```

ö

Gaps

ö

61 62 181

362 421 422 481

361

301

482

```
SEQ ID NO 2
                                                                                                                                                                                                                                   US-09-402-100-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 303
                                                                                                                                                                                                                                                                                                                                                                 62
                                                                                                                                                                                                                                                                                                                                                                                                                 122
                                                                                                                                                                                                                                                                                                                                                                                                                                           123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                542
                                                                                                                                                                                                          FEATURE:
                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                   SYELDLVLTNALIVDYTGIYKADIGIKDGKIAGIGKAGNKDMQDGVDNNLCVGPATEALA 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TIPFTKNTEAEHMDMLAVVCHHLDKSIKEDVQFADSRIRPQTIAAEDQLHDMGIFSITSSD 362
                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               542
                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                          GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOAMGRAGEVIPRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH 481
                                                                                                                                                                                                                                                                                                              62
                                                                                                                                                                                                                                                                                        61
                                          USES
                                                                                                                                                                                                                                                                                                    GKNKFDTNITFVSQAAYKAGIKEELGLDRAAPPVKNCRNITKKDLKFNDVTAHIDVNPET
                                                                                                                                                                                                                                                                                                                                         ENTLDLVITNAMI IDYTGI YKADI GI KNGKI HGI GKAGNKDMQDGVS PHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                      KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                            LRAAEEYSMIVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                               Gaps
APPLICANT: Chang, Yung-Fu
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Simpson, Kenneth W
APPLICANT: Zhu, Jiaqian
TITLE OF INVENTION: HELICOBACTER BIZZOZERONII UREASE GENES AND THEIR UTITLE OF INVENTION: HELICOBACTER AND TREATMENT METHODS
FILE REPRENCE: 19603/3881
CURRENT PELLING DATE: 2003-08-12
PRIOR APPLICATION NUMBER: 60/404,337
PRIOR APPLICATION NUMBER: 60/404,337
WHERR OF SEQ ID NOS: 41
SOFTWARE: PATENTING DATE: 2002-08-16
                                                                                                                                                                                                                                                             ô
                                                                                                                                                                                                                                      Length 569;
                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                   74.8%; Score 2244; DB 4; 72.5%; Pred. No. 3.9e-191; tive 71; Mismatches 85;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 2, Application US/09402100
Patent No. US20010019834A1
GENERAL INFORMATION:
APPLICANT: Daewoong Pharmaceutical Co,
APPLICANT: Kim, Byung-O
APPLICANT: Shin, Sung-Seup
APPLICANT: Yu, Young-Hyo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: PRT
ORGANISM: Helicobacter felis
                                                                                                                                                                                                                                  Query Match
Best Local Similarity 72.54
Matches 411; Conservative
                                                                                                                                                                                                           US-10-639-273-39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 13
US-09-402-100-2
                                                                                                                                                         SEQ ID NO 39
                                                                                                                                                                                                                                                                                        ~
                                                                                                                                                                                                                                                                                                                                                                 63
                                                                                                                                                                                                                                                                                                                                                                                           122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 543
                                                                                                                                                                                                                                                                                                                                                                                                                                           182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      482
                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
```

```
APPLICANT: Park, Myung-Hwan
APPLICANT: Choi, Deok-Joon
APPLICANT: Choi, Deok-Joon
APPLICANT: Using, Hyung-Jin
TITLE OF INVENTION: Recombinant Microorganisms Expressing Antigenic Proteins of Heliob
FILE REPERENCE: 0136/00140
CURRENT APPLICATION NUMBER: US/09/402,100
CURRENT APPLICATION NUMBER: KR 97-11950
EARLIER APPLICATION NUMBER: KR 97-11950
EARLIER FILING DATE: 1997-03-31
EARLIER PILING DATE: 1997-03-31
NUMBER OF SEQ ID NOS: 48
SOFTWARE: Patentin version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   243 VQVAIHTDTLNEAGCVEDTMAAIAGRTWHTYHTEGAGGGHAPDIIKVAGEHNILPASTNP 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SQAMGRAGEVIPRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIBGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2 KWKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 750;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 74.5%; Score 2234; DB 3; Best Local Similarity 73.5%; Pred. No. 4.7e-190; Matches 405; Conservative 71; Mismatches 75;
                                                                                                                                                                                                                                                                                                                                                                                                                                      OTHER INFORMATION: UreB/CTXA2B Chimeric protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-639-273-41

Sequence 41, Application US/10639273
Publication No. US20040142343A1
GENERAL INFORMATION:
APPLICANT: Chang, Yung-Fu
APPLICANT: Simpson, Kenneth W
                                                                                                                                                                                                                                                                                                                                                                    TYPE: PRT
ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEVFVDGKLCT 552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 543 YHVFVDGKEVT 553
```

```
181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSE 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPK 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          541
                                                                                                                                                                                                                                                                                                                              61 DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL 120
                                                                                                                                                                                                                                                                                                                                          62 YINELDAVITNAMIIDYTGIYKADIGIKGGKIVGIGKAGNPDTQDSVNEAMVGAATEVI 121
                                                                                                                                                                                                                                                                                                                                                                                   121 AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHR 180
                                                                                                                                                                                                                                                                                                                                                                                                  MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                      DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PIIPFTKNTADEHLDMLMVCHHLDKKIKEDVAFADSRIRPETIAAEDTLHDMGIFSITSS 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                                                   19
APPLICANT: Zhu, Jiaqian
TITLE OF INVENTION: HELICOBACTER BIZZOZERONII UREASE GENES AND THEIR USES
TITLE OF INVENTION: IN DIAGNOSTIC AND TREATMENT METHODS
FILE REPERRNCE: 19603/3881
CURRENT APPLICATION NUMBER: US/10/639,273
CURRENT FILING DATE: 2003-08-12
PRIOR PILING DATE: 2003-08-16
NUMBER OF SEQ ID NOS: 41
SOFTWARE: 2002-08-16
SEQ ID NO 41
LENGTH: 569
                                                                                                                                                                                                                                                                                        1 MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                               ;
0
                                                                                                                                                                                                                      Length 569;
                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                   1 Similarity 68.0%; Pred. No. 6.8e-179; 86; Conservative 82; Mismatches 100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TFEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TYEVRVNNTKITSKPVEKVSLGQLYCLF 569
                                                                                                                                                              ; TYPE: PRT
; ORGANISM: Helicobacter hepaticus
US-10-639-273-41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 15
US-10-282-122A-47638
                                                                                                                                                                                                                                               Matches 386;
                                                                                                                                                                                                                                                                                                   ~
                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              542
                                                                                                                                                                                                                    Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                  유
                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
```

Sequence 47638, Application US/10282122A
Publication No. US20040029129A1
GENERAL INFORMATION:
APPLICANT: Mang, Liangsu
APPLICANT: Aamudio, Carlos
APPLICANT: Haselbeck, Robert
APPLICANT: Obleen, Kari
APPLICANT: Cyskind, Judith
APPLICANT: Zyskind, Judith
APPLICANT: Wall, Daniel

```
APPLICANT: Xu, H.

TITLE OF INVENTION: Identification of Essential Genes in Microorganisms
FILE REFERENCE: ELITAA.034

CURRENT APPLICATION NUMBER: US/10/282,122A

CURRENT FILING DATE: 2003-02-20

PRIOR APPLICATION NUMBER: 60/191,078

PRIOR PLLING DATE: 2000-03-21

PRIOR PLLING DATE: 2000-03-23

PRIOR PLLING DATE: 2000-05-23

PRIOR PLLING DATE: 2000-05-26

PRIOR PLLING DATE: 2000-05-26

PRIOR APPLICATION NUMBER: 60/230,335

PRIOR PLLING DATE: 2000-05-06

PRIOR APPLICATION NUMBER: 60/230,335

PRIOR PLLING DATE: 2000-09-06

PRIOR PLLING DATE: 2000-09-06

PRIOR PLLING DATE: 2000-10-23

PRIOR PLLING DATE: 2000-11-27

PRIOR PLLING DATE: 2000-11-27

PRIOR PLLING DATE: 2000-11-27

PRIOR PLLING DATE: 2000-11-27

PRIOR PLLING DATE: 2000-11-27

PRIOR PLLING DATE: 2000-11-27

PRIOR PLLING DATE: 2000-11-27

PRIOR PLLING DATE: 2000-10-23

PRIOR PLLING DATE: 2000-10-2-16

PRIOR PLLING DATE: 2001-02-09

PRIOR PLLING DATE: 2001-02-09

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16

PRIOR PLLING DATE: 2001-02-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     241 DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DIQVAIHTDILNEAGFVESTVAAFKGRTIHTYHTEGAGGGHAPDILKVCGEMNVLPSSTN 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSE 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421 YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITFGKWNLHR 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3 LRLSRRAYAEMFGPTTGDRVRLADTELLIEIERDFTTYGEEVKFGGGKVIRDGMGQSQRV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 568;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 64.1%; Score 1922; DB 4; Length 5 Best Local Similarity 61.3%; Pred. No. 2.3e-162; Matches 348; Conservative 97; Mismatches 121; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ORGANISM: Burkholderia cepacia
Carr, Grant
Yamamoto, Robert
Forsyth, R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-282-122A-47638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
```

Search completed: November 28, 2005, 08:24:32 Job time : 162.242 secs

```
JS-10-793-626-118
179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FEATURE:
음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 2, Appl. Sequence 11, Appl. Sequence 136, Appl. Sequence 136, Appl. Sequence 13, Appl. Sequence 13, Appl. Sequence 21, Appl. Sequence 234, Appl. Sequence 234, Appl. Sequence 200, Appl. Sequence 200, Appl. Sequence 200, Appl. Sequence 200, Appl. Sequence 200, Appl. Sequence 200, Appl.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 2124, Ap
Sequence 182, App
Sequence 2808, Ap
Sequence 1269, Ap
Sequence 760, App
Sequence 760, App
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      35, Appl
67, Appl
1076, Ap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 118, App
                                                                                                                           November 28, 2005, 08:14:48; Search time 7.15365 Seconds (without alignments) 240.659 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                US-09-904-994B-3
2999
1 MKMKKQEYVNTYGPTKGDKV......KLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 3
Sequence 6
Sequence 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Language Applicated Louis Anews:

(cgn2 6/ptodate/1/pubpaa/US10 NEW PUB.pep:*

(cgn2 6/ptodata/1/pubpaa/US06 NEW PUB.pep:*

(cgn2 6/ptodata/1/pubpaa/US07 NEW PUB.pep:*

(cgn2 6/ptodata/1/pubpaa/US09 NEW PUB.pep:*

(cgn2 6/ptodata/1/pubpaa/US09 NEW PUB.pep:*

(cgn2 6/ptodata/1/pubpaa/US09 NEW PUB.pep:*

(cgn2 6/ptodata/1/pubpaa/US11 NEW PUB.pep:*

(cgn2 6/ptodata/1/pubpaa/US11 NEW PUB.pep:*
                    5.1.6
Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-10-793-626-118
US-10-485-17-182
US-10-10-10-3-759-1
US-11-013-759-1
US-11-074-176-186
US-11-074-176-186
US-11-013-759-3
US-11-013-759-13
US-11-013-759-13
US-11-013-759-14
US-11-013-759-14
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
US-11-013-759-16
                                                                                                                                                                                                                                                                                                                                                                hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Published Applications AA New:*
                    version -
                                                                                                                                                                                                                                                                                                                                 17545 segs, 3030971 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                           - protein search, using sw model
                                                                                                                                                                                                                                                                         BLOSUM62
Gapop 10.0 , Gapext 0.5
                    GenCore (c) 1993
                                                                                                                                                                                                                                                                                                                                                                                                      seq length: 0
seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query
Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 571
8831
8831
8831
8831
801
801
11090
11090
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
11060
1106
                                     Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Post-processing:
                                                                                                                                                                                                                                                                                                                                                                  Total number of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1789.5
1380.5
123.5
123.5
105.5
100
99.5
99.5
99.5
99.5
99.5
                                                                                                                                                                                                                                                                           Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score
                                                                                                                                                                                                                                                                                                                                                                                                      Minimum DB
Maximum DB
                                                                                           protein
                                                                                                                                                                                                                                         Sequence:
                                                                                                                                                                                                                                                                                                                               Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Database
                                                                                                                                                                                                                      Perfect
                                                                                                                             Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Š.
```

ALIGNMENTS

```
119 ALAGEGMIITAGGIDSHTHFLSPQOFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNL 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TTPTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMT 358
CENTERAL INFORMATION:
APPLICATION NO. US20050255478A1
GENERAL INFORMATION:
APPLICANT: KIMMERELY, WILLIAM JOHN
TITLE OF INVENTION: STAPHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
FILE REFERENCE: PU3480US
CURRENT PILING DATE: 2004-03-04
RELOR APPLICATION NUMBER: 60/164,258
PRIOR FILING DATE: 1999-11-09
NUMBER OF SEQ ID NOS: 4472
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 118
LENGTH: 571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQS---N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SPDENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HRMLRAAEEYSMNVGFLGKGNSSSKKOLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EYDVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITWAGELNILPSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                            OTHER INFORMATION: Description of Artificial Sequence: synthetic; OTHER INFORMATION: amino acid sequence US-10-793-626-118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           59.7%; Score 1789.5; DB 1; Length 571; 58.2%; Pred. No. 7.2e-135; ative 92; Mismatches 141; Indels 5;
                                                                                                                                                                                                                                                                                                                                                                        ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity 58.2%
Matches 332; Conservative
```

```
124 VKEVKAVYPNATYKPDSVKGKDVTĽAADAIYPQMDKSAPFIGADQAWKSGYT---GKG-- 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   84 DIG-----IKNGKIHGI-----GKAGNKDMQDGVSPHMVVGVGTEALAGEG 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ---MIITAGGIDSHTHFLSPQQFPTALANGVTTM-FGGGTGPVD-----GTNATTITPG 174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -----KQLVEQVEAGAIGFKLH 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ------LGQADDFSGKDVKGKVAVIQRGVIPFVDKAENAKNAGAIGAVIYNNA 431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGGHSPDVITMAGELNILPSSTTPTIPYT-----INTVAEHLDMLMTCHHLDKRIRED 330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                432 TGEIEANVMGMA------VPTVKLSKEEGEKLVQQIKEGKHSVVFSFKLDKKLGET 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LOFSOSR-----IRPG----SIAAEDVLHD-----MGVIAMISSDSQAMGRAGE 370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      : IASFSSKGPVMDTWMIKPDVSAPGVNIVSTIPTHDPKNPYGYGSKQGTSMASPHVAGTAA 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GVSEYIGSVEEGK-----IADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPT 468
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              221 EDWGTTPSAIDHCLSVADEY---DVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    371 VIPRT---W-----QTADKNKKEFGK-LPEDGKDNDNFRIKRYISKYTINPALTH
                    341 ASQL----PYNEYSVTL----PSYSSAKVMGYQEEKDLEALNGQEVELVEAG-----
  359 SSDSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 MKWKKQEYVN-TYGP--TKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 4.1%; Score 123.5; DB 1; Length 802; Best Local Similarity 20.3%; Pred. No. 0.015; Matches 141; Conservative 85; Mismatches 231; Indels 239;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             58 NSPDENTLDLVITNAMI---IDYT-----GIYK-------
                                                                                                                                                                                                                                                                                      APPLICANT: Clausen, ID Coth
APPLICANT: Clausen, ID Coth
APPLICANT: Olsen, Steen Troels
APPLICANT: Olsen, Peter Bjarke
APPLICANT: Ramussen, Michael Dolberg
TITLE OF INVENTION: Improved Bacillus Host Cel;
FILE REFERENCE: 10294.204-US
CURRENT APPLICATION NUMBER: US/10/510,386
CURRENT FILING DATE: 2004-10-04
NUMBER OF SEQ ID NOS: 248
SOFTWARE: Patentin version 3.3
SEQ ID NO 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   175 KWNLHRMLRAAEEYSMNVGFLGKGNSSSK----
                                                                                                                                                                                                                     ; Sequence 2, Application US/10510386; Publication No. US20050244922A1; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; ORGANISM: Bacillus licheniformis US-10-510-386-2
                                                                                                                                                                                                                                                                        APPLICANT: Andersen, Jens Tonne APPLICANT: Clausen, 1b Groth
                                                                                 SEYIGSVEEG 428
                                                                                                                      SEYVGSIEPG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LENGTH: 802
                                                                                                                                                                                                   US-10-510-386-2
                                                                                 419
                                                                                                                      422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SPDENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTE 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ALAGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNL 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EYDVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSS 298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TTPTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMT 358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TNPTLPYTHNTVDEHLDMVMITHHINAAIPEDIAFADSRIRKETIAAEDVLQDMGVFSMI 361
418
                                                                                                   421
                                                                                                                                          SEYIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMF 478
                                                                                                                                                                                 481
                                                                                                                                                                                                                     GHHGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVD 538
                                                                                                                                                                                                                                          64 RDDVNVADLVISNAVIIDYDKVVKADIGIKNGYIFAIGNAGNPDIMDNVD--IIIGSTTD 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4 KMTQNQYTSLYGPTVGDSIRLGDTNLFAQIEKDYAVYGEEATFGGGKSIRDGMAQNPRVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       182 HRMLEAAEGLPINVGFTGKGQATNPTALIEQINAGAIGLKVHEDWGATPSALSHALDVAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQS----N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HRMLRAABEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SSDSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFR1KRY1SKYT1NPALTHGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 431;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; Score 1380.5; DB 1; Length; Pred. No. 1.3e-102; 68; Mismatches 102; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Biosynexus Incorporated
APPLICANT: Biosynexus Incorporated
APPLICANT: Biosynexus Incorporated
APPLICANT: Biosynexus Incorporated
APPLICANT: Boster, Simon
APPLICANT: Mond, James
TITLE OF INVENTION: Antigenic Polypeptides
FILE REFERENCE: BIOGGS9WO
CURRENT PELLING DATE: 2004-02-02
PRIOR APPLICATION NUMBER: US/10/485,517
CURRENT FILING DATE: 2001-08-02
PRIOR APPLICATION NUMBER: GB 0118825.9
PRIOR FILING DATE: 2001-08-02
PRIOR APPLICATION NUMBER: GB 0200349.9
PRIOR FILING DATE: 2002-01-09
NUMBER OF SEQ ID NOS: 424
SEQ ID NO 182
                                                                                                                                                                                                                                                                                                   PKTFEVFVDGKLCTSKPTSQVPLAORYTFF 568
                                                                                                                                                                                                                                                                                                                       Sequence 182, Application US/10485517
Publication No. US20050256299A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; TYPE: PRT
; ORGANISM: Staphylococcus aureus
US-10-485-517-182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               46.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches 255; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-485-517-182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              239
                                                                                                                                                                                                                                                          482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  179
                                                                                                   362
                                                                                                                                        419
                                                                                                                                                                             422
                                                                                                                                                                                                                     479
                                                                                                                                                                                                                                                                                                 539
                                                             359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                         g
                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠ
                                                         ò
                                                                                             엄
                                                                                                                                    8
                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
```

Gaps

```
----NDGAGHALSQ 1191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           404 YISKYTINPAL-----THGVSEYIGSVEEGKIADLVVWNPAFFGVKPKIV 448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    355 IA-----MTSSDSQAMGRAG---EVIPRTWQTAD-KNKKEFGKLPEDGKDNDNFRIKR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; OTHER INFORMATION: Description of Artificial Sequence: synthetic; CTHER INFORMATION: amino acid sequence
US-10-793-626-90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
3.5%; Score 105.5; DB 1; Length 801;
Best Local Similarity 19.5%; Pred. No. 0.39;
Matches 128; Conservative 75; Mismatches 244; Indels 211;
                                                                                                                                           1273
                                                                 1192 GLAN-DIDKTRAASIGDVLNAGFNLQGNGEAVDFVSTYDTVDFIDG
 1139 DQTKGLTTPKLTVGNNNGKGIVIDSKDGQNTITGLSNTLANVT--
                                                                                                                              516 KNCRNITKKDFKFND--KTAK----ITVDPKTFEVFVDGKL
                                    482 GKAKFDT-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM: Artificial Sequence
                                                                                                                                                                                                 RESULT 5
US-10-793-626-90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    467
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                     8 6
                                                                                               ò
                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                       Sequence 11, Application US/11013759
Sequence 11, Application US/11013759
Publication No. US20050249747A1
GENERAL INFORMATION:
APPLICANT: Loosmore, Sheena M.
APPLICANT: Saaaki, Ken
APPLICANT: Yang, Yan Ping
APPLICANT: NECHIEL MICHEL H.
ITLE OF INVENTION: PROTEIN OF MORAXELLA
ITLE OF INVENTION: PROTEIN OF MORAXELLA
ITLE OF INVENTION: PROTEIN OF MORAXELLA
FILE REFERENCE: 1038-921MS:1jb
CURRENT APPLICATION NUMBER: US/11/013,759
CURRENT FILING DATE: 2004-12-16
PRIOR FILING DATE: 1999-07-27
NUMBER OF SEQ ID NOS: 32
SOSTWARE PATENTING US : 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                973 VGADGVKFAKVDKGNSSTGIDGTSRI------TKDQIGFT------ 1006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .087 HEFSVADEQG---NHFTVSNPYSSYD----TSKTSDVITFAGENGITTKVNKGVVRVGI 1138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              31;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ----GANG-----DKLKVGE 1028
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               212 AGAIGFKLHE-DWGTTPSAIDHCLSVADBYDVQVCIHTDTVNEAGYVDDTLNAMNGRAIH 270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    271 AYHIEGAGGGHSPDVITMAGELNILPSSTTPTIPYIIPYTINTVAEHLDMLMTCHHLDKRIRED 330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         331 LQFSQSRIRPGSIAAEDVLHDMGVIAMTSSDSQAMGRAGEV-----IPRTWQTADKNK 383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              384 KEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEYIGSVEEGKIADLVVWNPAFFGV 443
                                       ---ERQVLPVKNC 518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SPDENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGN-----KDMQDGVSP--- 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         --HMVVGVGTEAL-----AGEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGG 158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       875 EIHTTKGTADTALQTFKVKKDGATDDETITVG--------KDGTQNGKTV--- 916
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             159 GTGPVDGTNATTITPGK-----WNLHRMLRAAEEYSMNVGFLGKGNSSSKKQLVEQVE 211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             917 NTLKLKGENGLTVATNKDGTVTFGINTQSGLKAGDSTTLNKDGLSIKNPASN----EQIQ 972
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -----KPKIVIKG----GMVVFSEMGDSN-----ASVPTPQPVYYREMFGH---H 481
     602 SYGTFL--KDKGKQTKKQAFTIENLSSHRKAY---QLEYSFKGTGITVS--GTERVVVPA 654
                                                                          655 NQT------GKAAAKVTV----NSAKTKAGTYEGTVYIREDGRKVAEIPLL 695
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8 YVNTY-----GPTKGDKVRLGDTDLWAEVEHDYTTYGE--ELKFGAGKTIREGMGQSN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3.8%; Score 113; DB 7; Length 2314;
20.0%; Pred. No. 0.47;
iive 68; Mismatches 201; Indels 244; Gaps
                                         469 PQPVYYREMFGHHGKAKFDTSITFVSKVAYENGVKEKLGL---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 <u>:</u>
                                                                                                                                  RNITKKDFKFNDKTAKITVDP-----KTFEVFVDG 548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 --
--
--
--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM: Moraxella catarrhalis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity 20.0%
Matches 128; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQ ID NO 11
LENGTH: 2314
                                                                                                                                                                                                                 US-11-013-759-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-11-013-759-11
                                                                                                            519
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     835
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          110
       유
                                       ò
                                                                        셤
                                                                                                          ò
                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              염
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ሯ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
```

```
29;
----SITFVS---KVAYENGVKEKLGLERQVLPV 515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KADIGI-------MQDGVSPHMVVGVG 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 368 YGDTD-------DGSRF-----YNWMKKHETLEDYTL-VSLLHKGDEDAGTSIADM 410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                210 VEAGAIGFKIHEDWGTTPSAI-DHCLSVADEYDVQVCIHTDTVNEAGYVDDTLNAMNGRA 268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        269 IHAYHIBGAGGGHSP-----DVITMAGELNILPSSTT--------PTIPY 305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  580
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NGVTTMFGGGTGPVDGTNATTITPGKWNLHRMLRAAEEYSMNVGFLGKGNSSSKKQLVEQ 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    411 SDDETICGCNGVDKGTIVNAITSKGLTSVDE----VTKATKAGNSCGKCKGQIGELLQYT 466
                                                                                                                                                                                                                                                                                                                                                                              Sequence 90, Application US/10793626
Publication No. US2050255478A1
GENERAL INFORMATION:
APPLICANT: KINMERLY, WILLIAM JOHN
1TILE OF INVENTION: STARHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
1TILE OF INVENTION STARHYLOCOCCUS EPIDERMIDIS NUCLEIC ACIDS AND PROTEINS
CURRENT APPLICATION NUMBER: US/10/793,626
CURRENT FILING DATE: 1999-11-09
PRIOR APPLICATION NUMBER: 60/164,258
PRIOR PILING DATE: 1999-11-09
NUMBER OF SEQ ID NOS: 4472
SSOFTWARE: PATENTIN Ver. 2.1
SSOFTWARE: PATENTIN Ver. 2.1
LENGTH: 801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         249 K-DSGLDVNRGIVVNDYMQTSDSHIYAVGECAEHDGKVYGLVAPLYEQGKVLADYLTGKE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      214 IGDKDV------EAIKLADGRVIE------TDLVVMAVGIRPYTEVA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          527 YLNMVYPFEHRD-----EKDSRFANERYHANIQNDGTFSVIPQMRGGVTDADQLIRLGE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TEALAGEGM------IITAGGI--DSHTH---------FLSPQQFPTALA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 306 TINTV--AEHLDMLMTCHHLDKR-----IREDLQFSQSRIRPGSIAAEDVLHDMGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LGDDFIAAKPTGICPCTDLTRDQIVTQIRAKNLKSSKEVRHVLDFKDKDGCPKCRPAINY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 22 LGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPDENTLDLVITNAMIIDYTGIY
```

```
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301 PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       361 DSQAMGRA-----GEVI---PRIWQTADKN--KKEFGKLPEDGK------DNDNFR 400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                401 I--KRYISKYTINPAL-THGVSEYIGSVEEGKIADL--VVWNPAFFGVKPKIVIKGGMVV 455
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            456 FSEMGDSNASVPTPQPVY-----YREMFGHH-GKAKFDTSITFVSKVAYENGVKEKL 506
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ----YYREMFGHHGKAKFDTSIT 491
                         PTIKYII----EHGGKAILLSHLG-RVKSDADKKELSLKPVAERLSELL-DKPVTFVPSN 95
                                                                                                |: :: | |: |
-----KELYLRIMEAKKAVENEPWETIVENK 790
                                                                        FVSKVAYENGVKEKLGLEROVLPVKNCRNITKKDFKFNDKTAKITVDPKTFEVFVDGK 549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     507 GLERQVLPVKNCRNITKKDFKFNDKTAKITVD------PKTFEVFVD 547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              . 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 186, Application US/11074176

Sequence 186, Application US/11074176

GENERAL INFORMATION:
APPLICANT: Russell, William M.
APPLICANT: Alternanner, Todd R.
APPLICANT: Alternann, Eric
APPLICANT: Manu, Eric
APPLICANT: Manu, Eric
APPLICANT: Seril, Andrea Azcarate
TITLE OF INVENTION: Stress-Related Proteins and Uses Therefore
FILE REFERENCE: 5051-694
                                                                                                                                                                                                                                                                                                  APPLICANT: ALECTMAIN, ELIC
APPLICANT: MCAULIffe, Olivia
APPLICANT: MCAULIffe, Olivia
APPLICANT: Peril, Andrea Azcarate
APPLICANT: Peril, Andrea Azcarate
TITLE OF INVENTION: Nucleic Acid Sequences Encoding
TITLE OF INVENTION: Stress-Related Proteins and Uses Therefore
FILE REFERENCE: 5051-694
CURRENT APPLICATION NUMBER: US/11/074,176
PRIOR APPLICATION NUMBER: 60/551,161
PRIOR FILING DATE: 2004-03-08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3.3%; Score 100; DB 7; Length 403; 24.6%; Pred. No. 0.39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         43; Mismatches 112; Indels
 -----SEMGDSNASVPTPQPV-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NUMBER OF SEQ ID NOS: 381
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                      Sequence 354, Application US/11074176
Publication No. US20050250135A1
GENERAL INFORMATION:
APPLICANT: Klaenhammer, Todd R.
APPLICANT: Russell, William M.
                                                                                                             745 WLERMGFENVKNVLLNQEKQ----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORGANISM: Lactobacillus acidophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best Local Similarity 24.6
Matches 72, Conservative
 I KGGMVVF-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 7
US-11-074-176-186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-11-074-176-354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQ ID NO 354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    42
                                                                        492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                           g
                                                                      ò
                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    원
ò
```

```
400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 455
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              107 VSPHMVVGVGTEALAGEGMI-ITAGGIDSHTHFLSPQQFFTALANGVTTMFGGGTGPVDG 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           101 EGKEVEEAIDNMKDGDVVVLENTRFQDIDNDFGKRESGNDPKLGEYWASLGDIFVNDAFG 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               456 FSEMGDSNASVPTPQPVY-----YREMFGHH-GKAKFDTSITFVSKVAYENGVKEKL 506
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: SASAKI, Ken
APPLICANT: Yang, Yan Ping
APPLICANT: Yang, Yan Ping
APPLICANT: Klein, Michel H
APPLICANT: Klein, Michel H
TITLE OF INVENTION: RECOMBINANT HICH MOLECULAR WEIGHT MAJOR OUTER MEMBRANE
TITLE OF INVENTION: PROTEIN OF MORAXELLA
FILE REFERENCE: 1038-921MIS:jb
CURRENT APPLICATION NUMBER: US/11/013,759
CURRENT FILING DATE: 2004-12-16
PRIOR APPLICATION NUMBER: US/09/361,619
PRIOR APPLICATION NUMBER: US/09/361,619
NUMBER OF SEQ ID NOS: 32
SOFTWARE: PATENTIN Ver. 2.1
SEQ ID NOS: 32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                54 MGQSNSPDE-NTLDLVITNAMIIDYTGIYKADIGIKNGKI-HGIG-----KAGNKDMQDG 106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 921 VGQKNANNQVNTLTLKGENGLNI-----KTD----KNGTVTFGINTTSGLKAGKSTLNDG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      361 DSQAMGRA-----GEVI---PRTWQTADKN--KKEFGKLPEDGK------DNDNFR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    401 I---KRYISKYTINPAL-THGVSEYIGSVEEGKIADL--VVWNPAFFGVKPKIVIKGGMVV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301 PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | :: |||| |: || || || G-DKIVLPVD---NVAATEFS-NDASREVVGDDIPDNMMGLDIGPKTIAKFKD 319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           507 GLERQVLPVKNCRNITKKDFKFNDKTAKITVD------PKTFEVFVD 547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         49; Mismatches 160; Indels 201;
                                                                                                                                                                                                                                                                                                                                                                                                    99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 1992;
                                                                                                                                                                                                                                                                                                                                                DB 7; Length 408;
                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                          Ouery Match
3.3%; Score 100; DB 7; L
Best Local Similarity 24.6%; Pred. No. 0.4;
Matches 72; Conservative 43; Mismatches 112;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 3.3%; Score 99.5; DB 7;
Best Local Similarity 21.8%; Pred. No. 4.4;
CURRENT FILING DATE: 2005-03-07
PRIOR APPLICATION NUMBER: 60/551,161
PRIOR PELLING DATE: 2005-03-08
NUMBER OF SEQ ID NOS: 381
SOFTWARE: FREESEQ for Windows Version 4.0
FERMANE: FREESEQ FOR WINDOWS VERSION 4.0
                                                                                                                                                                                                                            TYPE: PRT ORGANISM: Lactobacillus acidophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 3, Application US/11013759
Publication No. US20050249747A1
GENERAL INFORMATION:
APPLICANT: LOOSMOIR, Sheena M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: PRT
ORGANISM: Moraxella catarrhalis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                      US-11-074-176-186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches 114;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-11-013-759-3
                                                                                                                                                                                                       LENGTH: 408
```

Qy 166 TNATTITPGKWNLHRMLRAAEEYSMNVGFLGKGNSSSKKQLVEQVEA 212 	
Qy 213 GAIGFKLHEDWGTTPSAIDHCLSVADEYDVQVCIHTDTVNRAGYVDDTLNAMNGRAIHAY 272	Qy 318 MTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSDSQAMGRAGEVIPRTWQ 377 ::
Qy 273 HIEGAGGGHSPDVITWAGELNILPSSTTPTIPYTIN-TVAEHLDML 317	Qy 378 TADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEYIGSVEEGKIADLVVWN 437
QY 318 MTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSDSQAMGRAGEVIPRTWQ 377 DD 1152 TVGNNNGKGIVIDSQNGQNTITGLSNTLANVTNDKGSVRTTEQGNII 1198	QY 438 PAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHHGKAKFDTSITF 492 DD 1212VLSAGFNLQGNGEAVDFVSTYDTVNFADGNATTAKVTYDDTSKT- 1255
Qy 378 TADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEYIGSVEEGKIADLVVWN 437	Qy 493 VSKVAYENGVKEKIGLERQVLPVKNCRNITKKDFKFNDKTAKIT 536
QY 438 PAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHHGKAKFDTSITF 492	HΩ
Db 1256 -SKVVYDVNDDTTIEVKDKKLGVKTTTLT 1284	U
RESULT 9 US-11-013-759-13 Sequence 13, Application US/11013759 Sequence 13, Application US/11013759 Publication No. US20050249747A1 GENERAL INFORMATION: APPLICANT: Locemore, Sheena M. APPLICANT: Saeaki, Ken APPLICANT: Saeaki, Ken APPLICANT: Raein, Michel H. TITLE OF INVENTION: RECOMBINANT HIGH MOLECULAR WEIGHT MAJOR OUTER MEMBRANE TITLE OF INVENTION: PROTEIN OF MORAXELLA FILE REFERENCE: 1038-921MIS:jb CURRENT APPLICATION NUMBER: US/11/013,759 CURRENT FILE CATION NUMBER: US/09/361,619	APPLICANT: Yang, Yan Ping APPLICANT: Klain, Michal H. APPLICANT: Klain, Michal H. TITLE OF INVENTION: RECOMBINANT HIGH MOLECULAR WEIGHT MAJOR OUTER MEMBRANE TITLE OF INVENTION: PROTEIN OF MORAXELLA TITLE OF INVENTION: PROTEIN OF MORAXELLA TITLE OF INVENTION: PROTEIN OF MORAXELLA CURRENT PILICATION NUMBER: US/11/013,759 CURRENT PILING DATE: 1099-07-27 NUMBER OF SEQ ID NOS: 32 SOFTWARE: PATENTING DAYE: 1999-07-27 NUMBER OF SEQ ID NOS: 32 SOFTWARE: PATENTING DAYE: 2.1 SEQ ID NO 4 LENGTH: 2047 TYPE: PRT CORGANISM: MORAXELIA CATAITHALIS US-11-013-759-4
PRIOR FILING DATE: 1999-07-27 NUMBER OF SEQ ID NOS: 32 SOFTWARE: Patentin Ver. 2.1 SEQ ID NO 13	Query Match 3.3%; Score 99.5; DB 7; Length 2047; Best Local Similarity 21.8%; Pred. No. 4.6; Matches 114; Conservative 49; Mismatches 160; Indels 201; Gaps 30;
; LENGTH: 1992 O ROANISM: Moraxella catarrhalis US-11-013-759-13	Qy 54 MGQSNSPDE-NTLDLVITNAMIIDYTGIYKADIGIKNGKI-HGIGKAGNKDMQDG 106
Query Match 3.3%; Score 99.5; DB 7; Length 1992; Best Local Similarity 21.8%; Pred. No. 4.4; Matches 114; Conservative 49; Mismatches 160; Indels 201; Gaps 30;	Qy 107 VSPHMVVGVGTEALAGEGMI-ITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDG 165
Qy 54 MGQSNSPDE-NTLDLVITNAMIIDYTGIYKADIGIKNGKI-HGIGKAGNKDMQDG 106 : ::	Qy 166 TNATTITPGKWNLHRMLRAAEBYSMNVGFLGKGNSSSKKOLVEQVEA 212
QY 107 VSPHMVVGVGTEALAGEGMI-ITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDG 165 Db 972GLSIKNPTGSEQIQVGADGVKFAKVNNNGVVGAG-IDG 1008	Qy 213 GAIGFKLHEDWGTTPSAIDHCLSVADEXDVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAY 272
166 TNATTITPGKWNLHRMLRAABBYSMNVGFLGKGNSSSKKQLVBQVBA	273 HIEGAGGGHSPDVITWAGELNILPSSTTPTIPYIN-TVAEHLDML :
1009 TTRITRDEIGFTGTNGSLDKSKPHLSKDGINAGGKKITNIQS	1147
Qy 213 GAIGFKLHEDWGTTPSAIDHCLSVADEYDVQVCIHTDTVNRAGYVDDTLNAMNGRAIHAY 272	Db 1207 TVGNNNGKGIVIDSQNTITGLSNTLANDKGSVRTTEQGNII 1253

```
Smith, Victoria
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Tumas, Daniel
                                        1311 -SKVVYDVNVDD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORGANISM: Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-10-131-826A-234
                                                                                                                                                                                                                                                                 APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                        셤
  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Sasaki, Ken
APPLICANT: Yang, Yan Ping
APPLICANT: Yang, Yan Ping
APPLICANT: Yang, Yan Ping
APPLICANT: Riahi, Michal H.
TITLE OF INVENTION: RECOMBINANT HIGH MOLECULAR WEIGHT MAJOR OUTER MEMBRANE
TITLE OF INVENTION: PROTEIN OF MORAXELLA
FILE REFERENCE: 1038-921MIS: jb
CURRENT APPLICATION NUMBER: US/11/013,759
CURRENT FILING DATE: 2004-12-16
PRIOR FILING DATE: 1999-07-27
NUMBER OF SEQ ID NOS: 32
SOFTWARE: PATENTIN Ver. 2.1
SEQ ID NO 7
LENGTH: 2047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1106 GEIAQNSHD--AVTGGKI-----YDLK----TELENKISSTAKT--AQN--SLHEF 1146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1064 T--TRITRDE-------IGFTGTNGSLDKSKPHLSKDGINAGGKKITNIQS 1105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1147 SVADEQĞINNFTVSNPYSSYDTSKTSDVİTFAĞENGİTTKVNKGVVRVGİDQİKGLTTPKL 1206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1207 TVGNNNGKGİVIDSQNGQNTİTGLSNTLANVTNDKGSVRTTEQ------GNIİ---- 1253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ----- AASIVD---- 1266
                                                                                                                             ------VLSAG---FNLQGNGEAVDFVSTYDTVNFAD--GNATTAKVTYDDTSKT- 1310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    438 PAFFGVKPKIVIKGGMVVFSEMGDSNA--SVPTPQPVYYREMFGHHGKAKF---DTSITF 492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        166 TNATTITPGKWNLHRMLRAAEEYSMNVGFLGKGNSSSKK-------QLVEQVEA 212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            213 GAIGFKLHEDWGTTPSAIDHCLSVADEYDVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAY 272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   273 HIEGAGGGH-----SPDVITMAGELNILPSSTTPTIPYTIN-TVAEHLDML 317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       318 MTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSDSQAMGRAGEVIPRTWQ 377
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           378 TADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEYIGSVEEGKIADLVVWN 437
378 TADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEYIGSVEEGKIADLVVWN 437
                                                                                    438 PAFFGVKPKIVIKGGMVVFSEMGDSNA--SVPTPQPVYYREMFGHHGKAKF---DTSITF 492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           54 MGQSNSPDE-NTLDLVITNAMIIDYTGIYKADIGIKNGKI-HGIG----KAGNKDMQDG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  107 VSPHMVVGVGTEALAGEGMI-ITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3.3%; Score 99.5; DB 7; Length 2047;
nilarity 21.8%; Pred. No. 4.6;
Conservative 49; Mismatches 160; Indels 201;
                                                                                                                                                                                                                   ----Trievkokkugvkirtli 1339
                                                                                                                                                                          493 VSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKIT 536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ------KDEDKTR-----
                                                                                                                                                                                                                                                                                                                         Sequence 7, Application US/11013759
Publication No. US20050249747A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM: Moraxella catarrhalis
US-11-013-759-7
                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Loosmore, Sheena M.
                                                                                                                                                                                                                   1311 -SKVVYDVNVDD-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches 114;
                                                                                                                                                                                                                                                                                                            US-11-013-759-7
                                                                                                                               1267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local S
                                    g
                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                    ò
                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠ
```

```
114 ILIHLKNFATRPYTİHPHGVFYEKÖ---SEGSLYPDGSSGPLKADDSVPP----- 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          68 VI-----TNAMIIDYTGI-YKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEA 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120 LAGEGMIITAGGIDSHTH-FLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNL 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Zhang, Zemin
TITLE OF INVENTION: SECRETED AND TRANSMEMBRANE POLYPEPTIDES AND NUCLEIC
TITLE OF INVENTION: ACIDS ENCODING THE SAME
FILE REFERENCE: P3330R1C128
CURRENT APPLICATION NUMBER: US/10/131,826A
CURRENT FILING DATE: 2002-04-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     16 KGDKVRLGDT----DLWAEVEHDYTTYGEELKFGA-----GKTIREGMGQSNSPDENTLDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR FILING DATE: 1997-09-18
PRIOR PILING DATE: 1997-09-18
PRIOR APPLICATION NUMBER: 60/059352
PRIOR FILING DATE: 1997-09-19
PRIOR FILING DATE: 1997-09-19
Remaining Prior Application data removed - See File Wrapper or PALM.
NUMBER OF SEQ ID NOS: 550
LENGTH: 1160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3.2%; Score 96; DB 1; Length 1160;
18.1%; Pred. No. 3.8;
ative 81; Mismatches 162; Indels 206;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          --TTİEVKÖKKLGVKİTTLİ 1339
493 VSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRIOR FILING DATE: 000-01-29
PRIOR FILING DATE: 1997-06-18
PRIOR FILING DATE: 1997-06-18
PRIOR FILING DATE: 1997-08-26
PRIOR APPLICATION NUMBER: 60/059113
PRIOR APPLICATION NUMBER: 60/059113
PRIOR APPLICATION NUMBER: 60/059115
PRIOR APPLICATION NUMBER: 60/059115
PRIOR PILING DATE: 1997-09-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRIOR FILLING DATE: 1997-09-17
PRIOR APPLICATION NUMBER: 60/059117
PRIOR FILING DATE: 1997-09-17
PRIOR FILING DATE: 1997-09-17
PRIOR FILING DATE: 1997-09-17
PRIOR FILING DATE: 1997-09-17
PRIOR FILING DATE: 1997-09-17
PRIOR APPLICATION NUMBER: 60/059184
PRIOR APPLICATION NUMBER: 60/059263
                                                                                                                                                                                                         Sequence 234, Application US/10131826A Publication No. US20050245730A1 GENERAL INFORMATION:
APPLICANT: Baker, Keyin P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Stewart, Timothy A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gerritsen, Mary E.
Goddard, Audrey
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Watanabe, Colin K
Wood, William
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Godowski, Paul J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gurney, Austin L.
                                                                                                                                                                                                                                                                                                                                                                                            Desnoyers, Luc
Filvaroff, Ellen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sherwood, Steven
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 3.2
Best Local Similarity 18.1
Matches 99; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
```

Db 358 DKIKKFLTESHDRQAKGKAITKKKYIGIRMASLTSSKAKELKDRHR 403 Qy 222 DWGTTPSAIDHCLSVADEYDVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGG 279	SULT 14 -11-013-759 SEQUENCE 9, PUBLICATION SENERAL INF APPLICANT:	Query Match Boest Local Similarity 19.08 Pred. No. 13; Boest Local Similarity 19.08 Pred. No. 13; Boest Local Similarity 19.08 Pred. No. 13; Boest Local Similarity 19.08 Pred. No. 13; Boest Local Similarity 19.08 Pred. No. 13; Achieve 120; Conservative Bs; Mismatches 210; Indels 218; Gaps 31; Qy	396 NDNFRIKRYISKYTINPALTHGVSEYIGSVEEGKIADLVVWN-PAFFGVKPKIVIKG
Db 161GG-SHIYNWITPEGHAPTDADPACLTWIX 188 Qy 179 HRMLRAAEEYSMAVGFLGKGNSSSKKQLVEQVEAGAIGFKLHE 221 Db 189 HSHVDARDIATGLIGPLITCKRGALDGNSPPQROVDHDFFLLFSVVDRNLSWHLARE 246 Qy 222 DWGTTPSAIDHCLSVADEYDVQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIGG 276 1	Qy 277 AGG	Sequence 1465, Application US/10821234 Sequence 1465, Application US/10821234 Publication No. US2005025514A1 GEREAL INFORMATION: US2005025514A1 APPLICANT: Abadamani, Susan APPLICANT: Tangary Y. Tom APPLICANT: Tangary Y. Tom TITLE OF INVENTION: Whethods for Diagnosis and Treatment of Preeclampsia APPLICANT: Tangary Y. Tom TITLE OF INVENTION: WHERE: US/10/821,234 CURRENT FILING DATE: 2003-04-09-7 FILE REFERENCE: BIL SEQ_genes Version 1.0 FILE REPERENCE: BIL SEQ_genes Version 1.0 SEQ ID NO: 1465 LENGTH: 480 SEQ ID NO: 100-04-04-07 WINDER OF SEQ ID NOS: 100-04-04-07 PRIOR FILING DATE: 2003-04-07 WINDER OF SEQ ID NOS: 100-04-04-07 PRIOR FILING DATE: 2003-04-07 PRIOR FILING DATE: 2003-04-07 WINDER OF SEQ ID NOS: 100-04-04-07 PRIOR FILING DATE: 2003-04-07 PRIOR FILING DATE: 2003-04-07 WINDER OF SEQ ID NOS: 100-04-04-07 PRIOR FILING DATE: 2003-04-09-04-07 PRIOR FILING DATE: 2003-04-09-04-04-09-04-09-04-09-04-09-04-09-04-09-04-09-04-09-04-09-04-04-09-04-09-04-09-04-09-04-09-04-09-04-09-04-09-04-09-04-09-04-09-04-09-04-04-09-04-04-04-04-04-04-04-04-04-04-04-04-04-	176 WNLHRMLRAAEEYSMVGFLGKGNSSSKKQLVEQVEAGAIGFKLHE 1 : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :

```
SEO VLDKTPPSAPKVNPVTNKST-AVKGKAEANAAIIVKSGKKTIGTGKADKKGAFFVKIKKQ 1018
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | | :: | | : | | : | | 1.3746 KILRGKQVLGTGTAGKSGAFSVKIPAQKAGQVLHV----AASGHQAETSLRTVVEKAPK 800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             801 NPSVKRITNKDTAVTGRTAAGYTIKVKNACKKVIAQGRADASVSVKVKINKQKEYAVLYV 860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       458 EMGDSNASVPTPQPVYYREMFGHHGKAKFDTSITFVS-KVAYENGVKEKLG-----LERQ 511
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            402 KRYISKYTINPALTHGVSEYIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMV----VFS 457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               909 SAKAKGKTIASGKANGKGEYKLKISROKAGTVI-----GVTAK--DKAGNVSKATAVT 959
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    90 GKIHGIGKAGNKDMQDGVS---PHMVVGVGTEALAGEGMIITAGGIDSHTHFLSPQQFPT 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         622 TDIPSLVPDGNVTYMSGTSMAAPHVA-----AAAGLLL-----SQNPSLKPKQIAS 667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        147 ALANGVITMFGGGTGPVDGTNATTITPGKWNLHRMLRAAEEYSMNVGFLGKGNSSSKKQL 206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   668 LLT-----ETTADVAREEQDNPNPDYDL 690
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                207 VEQVEAGAIGFKCHEDWGTTPSAIDHCLSVADEYDVQVCIH--------247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -----TDTVNEAGYVDDTLNAMN-GRAIHAYHIEGAGGGHSPD-----VITMAGE 291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 292 INILPSSTTPTIPYTINTVAEH-LDMLMTCHHLDKRIREDLQFS------QSRIRPG 341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          342 SIAAEDVILHDMGVIAMTSSDSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRI 401
                                                                           805 LSPTLPSIASPSGRNIALGNTIEEKDKSNAASIDDVLNAGFN--LKNNGKDKDFVSTYDT 862
747 GVNITTNRATGTVTFGIDQSNGLTTPKLTVGSDTNGN--RLVIEQVPSADGNSTKNIIKG 804
                                            -----GMVVFSEMGDSNASVPTPQPVYYREMFGHHGKAK-----FDT 488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     42 LKFGAGKTI------REGMGQSNSP--DENTLDLVITN--AMILDYTGIYKA-DIGIKN 89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
3.1%; Score 93; DB 1; Length 1047;
Best Local Similarity 19.2%; Pred. No. 5.7;
Matches 109; Conservative 75; Mismatches 227; Indels 156; Gaps
                                                                                                                                                                                                                                                                                      Sequence 200, Application US/10510386
Publication No. US20050244922A1
GENERAL INFORMATION:
APPLICANT: Clausen, Ib Groth
APPLICANT: Clausen, Ib Groth
APPLICANT: Olsen, Peter Bjarke
APPLICANT: Olsen, Peter Bjarke
APPLICANT: Nasmussen, Michael Dolberg
TITLE OF INVENTION: Improved Bacillus Host Cell
FILE REFERENCE: 10294.204-US
FILE REFERENCE: 10294.204-US
CURRENT FILING DATE: 2004-10-04
NUMBER OF SEQ ID NOS: 248
SOFTWARE: PatentIn version 3.3
SEQ ID NO 200
LENGTH: 1047
                                                                                                                                                                489 -----SITF----VSKVAYENGVKEK 505
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; TYPE: PRT
; ORGANISM: Bacillus licheniformis
US-10-510-386-200
                                                                                                                                                                                                                                                                          US-10-510-386-200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠ
엄
                                          ò
                                                                                ద
                                                                                                                      ò
                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
```

```
Sequence 26, Appl
Sequence 26, Appl
Sequence 27, Appl
Sequence 3, Appli
Sequence 21, Appli
Sequence 21, Appl
Sequence 21, Appl
Sequence 21, Appl
Sequence 21, Appl
Sequence 21, Appl
Sequence 28, Appli
Sequence 3, Appli
Sequence 3, Appli
Sequence 3, Appli
Sequence 26887, A
                                                                        November 28, 2005, 08:13:38; Search time 46.4987 Seconds (without alignments) 1009.915 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                        2999
1 MKMKKQEYVNTYGPTKGDKV......KLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Description
                                                                                                                                                                                                                                                                                                                                                                        /cgn2_6/ptodata/1/iaa/5_COMB.pep:*
/cgn2_6/ptodata/1/iaa/6_COMB.pep:*
/cgn2_6/ptodata/1/iaa/H_COMB.pep:*
/cgn2_6/ptodata/1/iaa/PCTUS_COMB.pep:*
/cgn2_6/ptodata/1/iaa/RE_COMB.pep:*
/cgn2_6/ptodata/1/iaa/RE_COMB.pep:*
5.1.6
Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-338-920B-12
US-09-338-920B-6
US-08-432-697-26
US-08-432-697-26
US-08-466-248-26
US-09-920-095-3
PCT-US-920-095-3
US-09-431-705-5
US-08-466-248-21
US-08-466-248-21
US-08-466-248-21
US-09-338-920B-10
US-09-338-920B-10
US-09-338-920B-10
US-09-338-920B-10
US-09-338-920B-10
US-09-489-019A-9216
US-09-489-019A-9216
US-09-489-019A-9216
US-09-489-019A-9216
US-08-489-019A-9216
US-08-489-019A-9216
US-08-489-019A-9216
US-08-489-019A-9216
US-08-489-019A-9216
US-08-487-628-5
US-08-47-822-7
US-08-47-822-7
US-08-410-279-118
US-08-134-001C-5026
US-08-412-697-25
                                                                                                                                                                                                                                          Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                  572060 segs, 82675679 residues
version :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SUMMARIES
                                                                                                                                                                                                                                                                                                          Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                  - protein search, using sw model
                                                                                                                                                                             BLOSUM62
Gapop 10.0 , Gapext 0.5
GenCore (c) 1993
                                                                                                                                                                                                                                                                                                                                                               Issued_Patents_AA:*
                                                                                                                                                                                                                                                                    Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                            US-09-904-994B-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query
Match Length
           Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           76.4
76.1
74.8
74.8
74.8
74.8
74.5
67.6
60.7
                                                                                                                                                                                                                                                                                                                                                                           Perfect score:
                                                                                                                                                                              Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2298.5 2297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score
                                                  OM protein
                                                                                                                                                       Seguence:
                                                                                                                                                                                                                     Searched:
                                                                                                                                                                                                                                                                                                                                                               Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Result
```

```
Sequence 14, Appl
Sequence 16, Appl
Sequence 16, Appl
Sequence 21, Appl
Sequence 10606, A
Sequence 10606, A
Sequence 11503, A
Sequence 1815, Ap
Sequence 1815, Ap
Sequence 1815, Ap
Sequence 1815, Ap
Sequence 1815, Ap
Sequence 1815, Ap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 23541, A
Sequence 10192, A
Sequence 2, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           243 VQVAIHTDTLNEAGCVEDTLEAIAGRTIHTFHTEGAGGGAAPDVIKWAGEFNILPASTNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGBELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                         Sequence 1
Sequence 2
                                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 2; Length 568;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           76.6%; Score 2298.5; DB 2; Length
73.7%; Pred. No. 7.7e-214;
tive 74; Mismatches 74; Indels
US-08-466-248-25
US-09-602-777A-14
US-09-602-777A-16
US-09-338-920B-14
US-10-012-819-160
US-09-949-016-6070
US-09-949-016-6070
US-09-949-016-11503
US-09-949-016-11503
US-09-702-705-1815
US-09-716-41815
US-09-716-41815
US-10-017-754-1815
US-10-017-754-1815
US-08-289-709-1
US-08-289-709-1
US-09-252-991A-23541
US-09-252-991A-23541
US-09-252-991A-23541
US-09-949-016-10192
                                                                                                                                                                                                                                                                                                                                                                                            ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORGANISM: Helicobacter heilmannii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity 73.7%
Matches 418; Conservative
       8880
8870
8870
8870
8870
883
883
883
       JS-09-338-920B-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-338-920B-12
                                                             1166
469
469
1789.5
173.5
173.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.5
171.
                                               1619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: PRT
         ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
```

5912, Ap 5, Appli 5, Appli 27, Appl

Sequence Sequence Sequence Sequence

Sequence Sequence Sequence Sequence

600.6 600.6 600.6 600.5 600.5 7.0 8.0 600.5 600.5 600.5 600.5 600.6 600.

Sequence Sequence Sequence Sequence

```
APPLICANT: Labigne, Agnes
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Ferrero, Richard L.
APPLICANT: Ferrero, Richard L.
TITLE OF INVENTION: IMMUNGENIC COMPOSITIONS AGAINST
TITLE OF INVENTION: HELICOBACTER INFECTION, POLYPEPTIDES FOR USE IN THE
TITLE OF INVENTION: COMPOSITIONS, AND NUCLEIC ACID SEQUENCES ENCODING SAID
TITLE OF INVENTION: POLYPEPTIDES
NUMBER OF SEQUENCES: 44
CORRESPONDENCE ADDRESS:
423 VGSVEVGKVADLVLWSPAFFGVKPNMIIKGGFIALSQMGDANASIPTPQPVYYREMFAHH 482
                                                 2 KWKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                   482 GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 569;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADDRESSEE: Finnegan, Henderson, Farabow, Garrett
ADDRESSEE: Dunner
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           76.5%; Score 2294; DB 1; 73.4%; Pred. No. 2.1e-213; iive 76; Mismatches 75;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    03495.0137-02000
                                                                                                                        542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                    Sequence 26, Application US/08467822 Patent No. 5843460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME: Meyers, Kenneth J. REGISTRATION NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 034
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STREET: 1300 I Street, N.W. CITY: Washington STATE: D.C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEPHONE: (202) 408-4000
TELEFAX: (202) 408-4400
INFORMATION FOR SEQ ID NO: 26:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         569 amino acide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity 73.49
Matches 416; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TOPOLOGY: linear
MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ZIP: 20005-3315
COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         amino acid
                                                                                                                                                                                                                                                          GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRANDEDNESS:
                                                                                                                                                                                                        US-08-467-822-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-08-467-822-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                 유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ద
                                                                                                                                 셤
                               8
                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | IGSVEEGKIADLVVMNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH 481
                                                                                                                                      541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY 421
 421
                                                                     481
                                                                                                     481
                                                                                                                                                      ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITFGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               243 VQVAIHTDTLNEAGCVEDIMAAIAGRIMHTFHTEGAGGGHAPDIIKVAGEHNILPASTNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               303 IIPFTVNTEAEHMDMLMVCHHLDKSIKEDVQFADSRIRPQTIAAEDTLHDMGIFSITSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGOSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SQAMGRVGEVITRTWQTADKNKKEFGRLKEEKGDNDNFRIKRYLSKYTINPAIAHGISEY
SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                   GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                   362 SQAMGRVGEVITRIWQTADKNKKEFGRLPEEKGDNDNFRIKRYISKYTINPAITHGISEY
                                                                 IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 569;
                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Soman, Gopalan
APPLICANT: Thomas, William D., Jr.
APPLICANT: Thomas, William D., Jr.
APPLICANT: Thomas, William D., Jr.
APPLICANT: Monath, Thomas D., Jr.
TITLE OF INVENTION: Stabilization of Helicobacter Urease
FILE REFREENCE: 06122/023002
CURRENT APPLICATION NUMBER: US/09/338,920B
CURRENT FILING DATE: 2002-12-23
PRIOR APPLICATION NUMBER: US 08/928,081
PRIOR PILING DATE: 1997-09-12
NUMBER OF SEQ ID NOS: 14
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          75; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match 76.6%; Score 2297; DB 2; Best Local Similarity 73.4%; Pred. No. 1.1e-213; Matches 416; Conservative 76; Mismatches 75;
                                                                                                                                                                                                      542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                          ; Sequence 6, Application US/09338920B; Patent No. 6709851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM: Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                           ; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                         RESULT 2
US-09-338-920B-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-338-920B-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH: 569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ~
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              m
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              363
                                                                 422
                                                                                                                                    482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                422
362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQ ID NO 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           요
                          g
                                                                                            g
                                                                                                                                 à
                                                                                                                                                                   g
                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                 8
                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
```

```
75;
                                                                                                                                                                      pred. No. 2.1e-213
76; Mismatches 75
                                                                                                                                                              76.5%; Score 2294;
73.4%; Pred. No. 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               542 FEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             : |||||| |||| :: | ||| :: |
543 YHVFVDGKEVTSKPANKVSLAQLFSIF
TELECOMMUNICATION INFORMATION TELEPHONE: (202) 408-4000
        TELEPHONE: (202) 408-4000
TELEPAX: (202) 408-4400
INFORMATION FOR SEQ ID NO: 26
SEQUENCE CHARACTERIFITICS:
LENGTH: 569 amino acids
                                                                                                                                                              Query Match 76.5
Best Local Similarity 73.4
Matches 416; Conservative
                                                                           TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-08-466-248-26
                                                                                                                                                                                                                    ~
                                                                                                                                                                                                                                                                                                                            122
                                                                                                                                                                                                                                                                                                                                                                                   182
                                                                                                                                                                                                                                                                                                                                                                                                            183
                                                                                                                                                                                                                                                                                                                                                                                                                                        242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     483
                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                         쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a
a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Я
                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION:
APPLICANT: Labigne, Agnes
APPLICANT: Saverbaum, Sebastien
APPLICANT: Saverbaum, Sebastien
APPLICANT: Ferrero, Richard L.
APPLICANT: Frerero, Informacian Compositions adainst
TITLE OF INVENTION: IMMUNOGENIC COMPOSITIONS, POLYPEPTIDES FOR USE IN THE
TITLE OF INVENTION: COMPOSITIONS, AND NUCLEIC ACID SEQUENCES ENCODING SAID
TITLE OF INVENTION: POLYPEPTIDES
NUMBER OF SEQUENCES: 44
CORRESPONDENCES: 44
                                                                                                                                                                                                                                                                                                                                                                                                                           542
                121
                              GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                  241
                                                                                                                                      301
                                                                                                                                                                                           TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361
                                                                                                                                                                                                                                                SOAMGRAGEVIPRTWOTADKWKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY 421
                                                                                                                                                                                                                                                                                                      IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH 481
                                                                                                                                                                                                                                                                                                                                                          541
                                                                                                                                                                               VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                 GKAKFDISITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: Floppy disk
COMPUTER: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/432,697
FILING DATE: 02-MAY-1995
CLASSIFICATION: 424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Finnegan, Henderson, Farabow, Garrett
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REGISTRATION NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 03495.0137-00000
                                                                                                                                                                                                                                                                                                                                                                                                                                                       568
                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEVFVDGKLCTSKPTSQVPLAQRYTFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 YHVFVDGKEVTSKPANKVSLAQLFSIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 26, Application US/08432697
Patent No. 6248330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ADDRESSEE: Finnegau, ADDRESSEE: Dunner STREET: 1300 I Street, N.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ATTORNEY/AGENT INFORMATION:
NAME: Meyers, Kenneth J.
REGISTRATION NUMBER: 25,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 4
US-08-432-697-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COUNTRY:
                                                                                            123
                                                                                                                                                                                                        243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 543
                                                                                                                         182
                                                                                                                                                    183
                                                                                                                                                                                                                                                              303
                                                                                                                                                                                                                                                                                                                  363
                                                                                                                                                                                                                                                                                                                                                                        423
                                                                                                                                                                                                                                                                                                                                                                                                                           483
                                                                                                                                                                                                                                                                                                                                                                                                                                                       542
                                          63
                                                                    122
                                                                                                                                                                               242
                                                                                                                                                                                                                                    302
                                                                                                                                                                                                                                                                                        362
                                                                                                                                                                                                                                                                                                                                             422
                                                                                                                                                                                                                                                                                                                                                                                                 482
                62
                                    ద
                                                                                        쉱
                                                                                                                                                 엄
                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                     원
                                                                                                                                                                                                                                                                                                                                                                                                                          임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 유
                                                                    ծ
                                                                                                                       ð
                                                                                                                                                                             ò
                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                ò
```

```
Sequence 26, Application US/08466248

Sequence 26, Application US/08466248

Patent No. 6258359

GENERAL INFORMATION:
APPLICANT: Labigne, Agnes
APPLICANT: Bauerbaum, Sebastien
APPLICANT: Riberge, Jean-Michel
ITILE OF INVENTION: IMMUNCENIC COMPOSITIONS AGAINST
ITILE OF INVENTION: COMPOSITIONS, AND NUCLEIC ACID SEQUENCES ENCODING SAID
ITILE OF INVENTION: POLYPEPTIDES
ITILE OF SEQUENCES: 4
CORRESPONDENCE ADDRESS:
ADDRESSEE: Finnegan, Henderson, Farabow, Garrett &
                                                                                                                                                    ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                         GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITFGKWNLHRM 181
                                                                                                                                                                                                                                                       123 GEGLIVTAGGIDTHIHFISPQQIPTAFASGVTTMIGGGTGPADGTNATTITPGRRNLKWM 182
                                                                                                                                                                                                                                                                                                          LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD 241
                                                                                                                                                                                                                                                                                                                                                242
                                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                         302
                                                                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     542
                                                                                                              62
                                                                             61
                                                                                              VOVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                         KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SQAMGRAGEVI PRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    422 IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                       Gaps
                                       ..
0
Length 569;
                                       Indels
```

```
122 GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       423 VGSVEVGKVADLVLWSPAFFGVKPNMIIKGGFIALSQMGDANASIPTPQPVYYREMFGHH 482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            62 ENTLDLVITNAMIIDYTGIYKADIGIKNCKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        482 GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                  Sequence 3, Application US/08920095
Patent No. 5837240
BAPPLICANT: Cynthia K. Lee et al.
TITLE OF INVENTION: MULTIMERIC, RECOMBINANT UREASE VACCINE NUMBER OF SEQUENCES: 3
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COUNTAIN COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: Patentin Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    76.4%; Score 2290; DB 1; 73.6%; Pred. No. 5.1e-213; ative 75; Mismatches 74;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION DATA:
APPLICATION NUMBER: US/08/431,041
FILING DATE: 28-APR-1995
ATTORNEY/AGENT INFORMATION:
NAME: Clark, Paul T.
REGISTRATION NUMBER: 30,162
REFERENCE/DOCKEY NUMBER: 06132/013001
TELECOMMUNICATION INFORMATION:
                                                                                                                                        542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/920,095
                                                                                                                                                                                                                                                                                                                                                                                      E: Fish & Richardson P.C.
225 Franklin Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELEPHONE: (617) 542-5070 TELEPAX: (617) 542-806 INFORMATION FOR SEQ ID NO: 3: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        566 amino acida
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches 415; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                            STREET: 225 Fr
CITY: Boston
STATE: MA
COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE
                                                                                                                                                                                                                                                                                                                                                                                        ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-08-920-095-3
                                                                                                                                                                                                                RESULT 6
US-08-920-095-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                              à
                                      ò
                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            243 VQVAIHTDTLNEAGCVEDTMAAIAGRTWHTFHTEGAGGGHAPDIIKVAGEHNILPASTNP 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         303 TIPFTVNTEAEHMDMLMVCHHLDKSIKEDVQFADSRIRPQTIAAEDTLHDMGIFSITSSD 362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SQAMGRVGEVITRIWQTADKNKKEFGRLKEEKGDNDNFRIKRYLSKYTINPAIAHGISEY 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                122 GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITFGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 569;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  75; Indels
                                                                                    COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IND FC compatible
COMPUTER: IND FC compatible
COMPUTER: IND FC compatible
COMPUTER: IND FC compatible
COMPUTER: IND FC compatible
COMPUTER: IND FC compatible
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/466,248
FILING DATE: 06-JUN 1995
CLASSIFICATION: 435
PRIOR APPLICATION NUMBER: US 08/447,177
FILING DATE: 19-MAY-1995
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/432,697
FILING DATE: 02-MAY-1995
CLASSIFICATION: 435
CLASSIFICATION: 435
FILING DATE: 02-MAY-1995
CLASSIFICATION: 435
CLASSIFICATION: 435
CLASSIFICATION: 435
CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 76.5%; Score 2294; DB 2; Best Local Similarity 73.4%; Pred. No. 2.1e-213; Matches 416; Conservative 76; Mismatches 75;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME: Meyers, Kenneth J.
REGISTRATION NUMBER: 25,146
REFERBYCE/DOCKET NUMBER: 03495.0137-02000
TELECOMMUNICATION INFORMATION:
B: Dunner
1300 I Street, N.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TELEPHONE: (202) 408-4000
TELEPAX: (202) 408-4400
INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            569 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TOPOLOGY: linear
MOLECULE TYPE: protein
                                    Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                amino acid
                                                                          USA
ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; MOLECULE TYI
US-08-466-248-26
                                                                          COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
```

Gaps

ö

```
301
                                                                                                                                                                                                                                                                                                                      243 VQVAIHTDTLNEAGCVEDTMAAIAGRTWHTFHTEGAGGGHAPDIIKVAGEHNILPASTNP 302
                                                                                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                                                                                                                             481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                  122 GEGMIITAGGIDSHTHFLSPQQPPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     63
                                                                                                                                                                                     182 LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                      242 VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                        TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                          SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          422 IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                2 KWKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGBELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Kleanthous, Harold
APPLICANT: Londono-Arcila, Patricia
APPLICANT: Freeman, Donna
APPLICANT: Freeman, Donna
APPLICANT: Freeman, Donna
APPLICANT: Freeman, Donna
APPLICANT: Freeman, Donna
TITLE OF INVENTION: Use of salmonella vectors for
TITLE OF INVENTION: vaccination against helicobacter infection
FILE REFERENCE: 06132/060001
CURRENT APPLICATION NUMBER: US/09/431,705
CURRENT FILING DATE: 1999-11-01
NUMBER OF SEQ ID NOS: 52
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 570;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
Indels
74;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match 76.1%; Score 2281; DB 2; Best Local Similarity 73.0%; Pred. No. 3.9e-212; Matches 414; Conservative 76; Mismatches 77;
 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               : |||||| |||| ::| ||| :
543 YHVFVDGKEVTSKPANKVSLAQLF 566
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 5, Application US/09431705; Patent No. 6585975; GENERAL INFORMATION:
75;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM: Helicobacter pylori
US-09-431-705-5
 Conservative
 415;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQ ID NO 5
LENGTH: 570
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-431-705-5
                                                                                                                                                                                                                                                                                                                                                                        302
                                                                                                                                                                                                                                                                     183
                                                                                                                                                                                                                                                                                                                                                                                                         303
                                                                                                                                                                                                                                                                                                                                                                                                                                           362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: PRT
 Matches
                                                         셤
                                                                                               Š
                                                                                                                            g
                                                                                                                                                                  δ
                                                                                                                                                                                            ద
                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                요
                                                                                                                                                                                                                                                                                                                              임
                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                    유
                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                  ે
                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                    421
                                                                                                                                                    243 VQVAIHTDTLNEAGCVEDTWAAIAGRIWHTFHTEGAGGGAAPDIIKVAGEHNILPASINP 302
                                                                                                                                                                                                       481
 VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITWAGELNILPSSTTP 301
                                                                                                                                                                                                                                                                                      TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                   SOAMGRAGEVI PRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                     IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                     GKAKPDISITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 2290; DB 4; Length 566;
Pred. No. 5.1e-213;
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 3, Application PC/TUS9605800
GENERAL INFORMATION:
APPLICANT: Oravax, Inc.
TITLE OF INVENTION: MULTIMERIC, RECOMBINANT UREASE VACCINE
NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COUNTRY: USA
ZIP: 02110-2804
ZIP: 02110-2804
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: PCT/US96/05800
FILING DATE: 23-APR-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ATTORNEY/AGENT INFORMATION:
NAME: Clark, Paul T.
REGISTRATION NUMBER: 30,162
REFERENCE/DOCKET NUMBER: 06132/02001
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 542-8570
TELEPHONE: (617) 542-8906
INFORMATION FOR SEQ ID NO: 3:
                                                                                                                                                                                                                                                                                                                                         FEVFVDGKLCTSKPTSQVPLAQRY 565
                                                                                                                                                                                                                                                                                                                                                          : |||||| |||| ::| ||| :
543 YHVFVDGKEVTSKPANKVSLAQLF 566
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          E: Fish & Richardson P.C.
225 Franklin Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/431,041
FILING DATE: 28-APR-1995
CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/569,122
FILING DATE: 06-DEC-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            76.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       : 566 amino acids
amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE CHARACTERISTICS
LENGTH: 566 amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STREET: 225 F1
CITY: Boston
STATE: MA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 7
PCT-US96-05800-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TOPOLOGY:
                                                                                                                                                                  363
                                                                                                                                                                                                                                                                                                                                         542
                                                                                                                                     362
                                                                   302
                                                                                                                                                                                                     422
                                                                                                                                                                                                                                                                       482
                             셤
                                                                   ⋩
                                                                                           셤
                                                                                                                                   ò
                                                                                                                                                                 g
                                                                                                                                                                                                   ò
                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                   g
```

```
YKVKVDGKEVTSKAADELSLAQLYNLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            , Sequence 21, Application US/08432697
; Patent No. 6248330
; GENERAL INFORMATION:
                CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Labigne, Agnes
                                                                                                                                                                               TYPE: amino acid
STRANDEDNESS: single
                                                                                                                                                                                                                            MOLECULE TYPE: peptide
                                                                                                                                                                                                                                                                   ), OTHER INFORMATION:
US-08-467-822-21
                                                                                                                                                                                                                                                           NAME/KEY: Protein
                                                                                                                                                                                                              linear
   FILING DATE: 02 CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 10
US-08-432-697-21
                                                                                                                                                                                                                TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   543
                                                                                                                                                                                                                                                                                                                                                                                                                    ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   유
                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
APPLICANT: Labigne, Agnes
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Ferrero, Richard L.
APPLICANT: Ferrero, Richard L.
APPLICANT: Thiberge, Jean-Michel
TITLE OF INVENTION: IMMUNOGENIC COMPOSITIONS AGAINST
TITLE OF INVENTION: HELICOBACTER INFECTION, POLYPEPTIDES FOR USE IN THE
TITLE OF INVENTION: POLYPEPTIDES
TITLE OF INVENTION: POLYPEPTIDES
NUMBER OF SEQUENCES: 44
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                   423
                                               181
                                                                           183
                                                                                                        241
                                                                                                                                      243
                                                                                                                                                                   301
                                                                                                                                                                                  244 VQVAIATDTLNEAGCVEDTMAAIAGRTWHTFHTEGAGGGHAPDIIKVAGEHNILPASTNP 303
                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                             421
                                                                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                                                                                                             483
                                                                                                                                                                                                                                                                                                                                                                                                          GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT 541
                                                                                                                                                                                                                                                                                                                                                                                                                          364 SQAMGRVGEVITRTWQTADKNKKEFGRLKEEKGDNDNFRIKRYLSKYTINPAIAHGISEY
                                                                                                                                                                                                                                                                                                                                                               GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM
                                                                                                       LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                  VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                            TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                     SOAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                 IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ADDRESSEE: Finnegan, Henderson, Farabow, Garrett
ADDRESSEE: Dunner
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Patentin Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ZIP: 20005-3315
ZIP: 20005-3315
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Ver
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/467,822
FILING DATE: 06-UJN-1995
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION DATA:
FILING DATE: 19-MAY-1995
CLASSIFICATION: 435
CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/432,697
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 21, Application US/08467822
Patent No. 5843460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1300 I Street, N.W.
                                                                                                                                                                                                                                            ••
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CITY: Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 9
US-08-467-822-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STREET:
                                                                                                                                                                                                                                                                                                                                                                             424
                                                                                                                                                                                                                                                                                                                                                                                                         482
                                                                                                        182
                                                                                                                                                                   242
                                                                                                                                                                                                                                                                                                                                                422
                                                                                                                                                                                                                                                                                       362
                                                                                                                                                                                                                            302
                                                                                                                                                                                          g
                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                              Dp
                                                                                                                                                                                                                                                                                                                                                                            유
                                                                                                                                                                                                                                                                                                                                                                                                                                   요
                                                                     g
                                                                                                    ò
                                                                                                                                 셤
                                                                                                                                                                Š
                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                              ò
```

```
182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3 KISRKEYVSMYGPTTGDRVRLGDTDLILEVEHDCTTYGEEIKFGGGKTIRDGMSQTNSPS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           123 AEGLIVTAGGIDTHIHFISPQQIPTAFASGVTTMIGGGTGPADGTNATTITPGRANLKSM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VOVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   243 VQVAIHTDTLNEAGCVEDTLEAIAGRTIHTFHTEGAGGGHAPDVIKMAGERNILPASTNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            363 SQAMGRVGEVITRTWQTADKNKKEFGRLKEEKGDNDNFRIKRYISKYTINPGIAHGISDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 122 GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            182 LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             362 SQAMGRAGEVIPRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         422 IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 569;
                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 74.8%; Score 2244; DB 1; Best Local Similarity 72.5%; Pred. No. 1.5e-208; Matches 411; Conservative 71; Mismatches 85;
                                                                                                                                                                                                                                                                                                                                                                               /note= "URE B - FIGURE 3."
NAME: Meyers, Kenneth J.
REGISTRATION NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 03495.0137-02000
TELECOMMUNICATION INFORMATION:
TELEPHONE: (202) 408-400
INFORMATION FOR SEQ ID NO: 21:
SEQUENCE CHARACTERISTICS:
LENGTH: 569 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
```

```
362 SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                               543 YKVKVDGKEVTSKAADELSLAQLYNLF 569
                                                                                                                                                                                                                                                                    FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 21, Application US/08466248
Patent No. 6258359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STREET: 1300 I Street, N.W. CITY: Washington STATE: D.C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TELEFAX: (202) 408-4400
INFORMATION FOR SEQ ID NO: 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LENGTH: 569 amino acida
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ZIP: 20005-3315
ZIP: 20005-3315
COMPUTER READABLE FORM:
MEDIUM TYPE: Florm:
COMPUTED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME/KEY: Protein
LOCATION: 1..569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                         JS-08-466-248-21
                                                                                            422
                                                                                                                                                                                482
                                                                                                                                                                                                                                                                      542
                                                                                                                                                                                                                         g
                                           g
                                                                                            ò
                                                                                                                              원
                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                        ò
    APPLICANT: Ferrero, Richard L.
APPLICANT: Thiberge, Jean-Michel
TITLE OF INVENTION: IMMUNOGENIC COMPOSITIONS AGAINST
TITLE OF INVENTION: HELICOBACTER INFECTION, POLYPEPTIDES FOR USE IN THE
TITLE OF INVENTION: COMPOSITIONS, AND NUCLEIC ACID SEQUENCES ENCODING SAID
NUMBER OF SEQUENCES: 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       183 LRAAEBYAMNLGFLAKGNVSYEPSLRDQIEAGAIGFKIHEDWGSTPAAIHHCLNVADEYD 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             123 AEGLIVTAGGIDTHIHPISPQQIPTAFASGVTTMIGGGTGPADGTNATTITPGRANLKSM 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           243 VQVAIHTDTLNEAGCVEDTLEAIAGRTIHTFHTEGAGGGAAPDVIKWAGEFNILPASTNP 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          122 GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGHSPDVITMAGELNILPSSTTP 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        302 TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3 KISRKEYVSMYGPITGDRVRLGDTDLILEVEHDCTTYGEEIKFGGGKTIRDGMSQTNSPS 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 569;
                                                                                                                                                                                                                                                                                                                   COUNTRY: USA
ZIP: 20005-3315
ZIP: 20005-315
ZORUTER RADABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/432,697
FILING DATE: 02-MAY-1995
CLASSIFICATION: 424
ATTOMENY/AGENT INFORMATION:
NAME: Meyers, Kenneth J.
REGISTRATION NUMBER: 25,146
REGISTRATION NUMBER: 25,146
REGISTRATION NUMBER: 03495.0137-00000
TELECOMMUNICATION INFORMATION:
TELEPHONE: (202) 408-4000
TELESTAX: (202) 408-4400
TELESTAX: (202) 408-4400
TELESTAX: (202) 408-4100
TELESTAX: (202) 408-4100
TELESTAX: (202) 408-4100
TELESTAX: (202) 408-4100
TELESTAX: (202) 408-4100
TELESTAX: (202) 408-4100
TELESTAX: (202) 408-4100
TELESTAX: (202) 408-4100
                                                                                                                                                                              CORRESPONDENCE ADDRESS:
ADDRESSEE: Finnegan, Henderson, Farabow, Garrett
ADDRESSEE: Dunner
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      74.8%; Score 2244; DB 2; 72.5%; Pred. No. 1.5e-208; ive 71; Mismatches 85;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; LOCATION: 1..569
; OTHER INFORMATION: /note= "URE B - FIGURE 3."
US-08-432-697-21
                                                                                                                                                                                                                                                    1300 I Street, N.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local Similarity 72.5
Matches 411; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MOLECULE TYPE: peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME/KEY: Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                        Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: amino acid
STRANDEDNESS: si
                                                                                                                                                                                                                                                      STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
```

```
APPLICANT: Labigne, Agnes
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Ferrero, Richard L.
APPLICANT: Thiberge, Jean-Michel
TITLE OF INVENTION: IMMUNGENIC COMPOSITIONS AGAINST
TITLE OF INVENTION: COMPOSITIONS, AND NUCLEIC ACID SEQUENCES ENCODING SAID
TITLE OF INVENTION: POLYPEPTIDES
NUMBER OF SEQUENCES: 4
ADDRESSEE: Finnegan, Henderson, Farabow, Garrett &
ADDRESSEE: Finnegan, Henderson, Farabow, Garrett &
                                                                                                                                             363 SQAMGRVGEVITRTMQTADKOKKEFGRLKEEKGDNDNFRIKRYISKYTINPGIAHGISDY 422
                                                                                                                                                                                                                                               GKAKEDISITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT 541
                                                                                                            IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OFTWARE PATENTING SYSTEM: PC-DOS/MS-DOS CORRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/466,248
FILING DATE: 06-JUN-1995
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/447,177
FILING DATE: 19-MAY-1995
CLASSIFICATION: 435
PRIOR APPLICATION NUMBER: US 08/447,177
FILING DATE: 02-MAY-1995
CLASSIFICATION NUMBER: US 08/432,697
FILING DATE: 02-MAY-1995
CLASSIFICATION NUMBER: US 08/432,697
FILING DATE: 02-MAY-1995
CLASSIFICATION NUMBER: US 08/432,697
FILING DATE: 02-MAY-1995
CLASSIFICATION NUMBER: 25,146
REGISTRATION NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 25,146
```

301

122 181 182 241

121

62

61

302 361 422

481 482 541

362 421 542

```
ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                         3 KISRKEYVSMYGPITGDRVRLGDIDLILEVEHDCTTYGEBIKFGGGKTIRDGMSQINSPS
                                                                                                                       122 GEGMIITAGGIDSHTHFLSPQQFFTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM
                                                                                                                                                                                                       123 AEGLIVTAGGIDTHIHFISPQQIPTAFASGVTTMIGGGTGPADGTWATTITPGRANLKSM
                                                                                                                                                                                                                                                                                    243 VQVAIHTDTLNEAGCVEDTLEAIAGRTIHTFHTEGAGGGHAPDVIKMAGEFNILPASTNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                  483 GKNKFDTNITFVSQAAYKAGIKEELGLDRAAPPVKNCRNITKKDLKFNDVTAHIDVNPET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3 KISRKEYASMYGPTTGDKVRLGDTDLIAEVEHDYTIYGEELKFGGGKTLREGMSQSNNPS
                                                                                                  62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                                                                                                                                                                                             VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                                             302 TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 363 SQAMGRVGEVITRIMQTADKNKKEFGRLKEEKGDNDNFRIKRYISKYTINPGIAHGISDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 482 GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                    KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                  LRAAEEYSMNVGFLGKGNSSSKKOLVEOVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          422 IGSVEEGKIADLUVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .
,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 559;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 8, Application US/09338920B
; Sequence 8, Application US/09338920B
; Sequence 8, Application US/09338920B
; Parent No. 6703851
; GENERAL INFORMATION:
    APPLICANT: Thomas William D., Jr.
    APPLICANT: Thomas William D., Jr.
    TITLE OF INVENTION: Stabilization of Helicobacter Urease
; TITLE REFERENCE: 06132/023002
; CURRENT APPLICATION NUMBER: US/09/338,920B
; CURRENT FILING DATE: 1907-09-12
; RIOR PELICATION NUMBER: US 08/928,081
; RIOR FILING DATE: 1997-09-12
; NUMBER OF SEQ ID NOS: 14
; SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 74.5%; Score 2233; DB 2; Best Local Similarity 73.5%; Pred. No. 1.7e-207; Matches 405; Conservative 70; Mismatches 76;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; TYPE: PRT
; ORGANISM: Helicobacter pylori
US-09-338-920B-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 13
US-09-338-920B-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LENGTH: 559
                    N
                                                                                                                                                                                                                                                                  182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            62
                                                                                                                                                                                                                                                                                                                                               242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQ ID NO 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                    ò
                                                g
                                                                                                8
                                                                                                                               셤
                                                                                                                                                                                ò
                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                           ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                  ö
                                                                                                                                                                                                                                                             122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          302
                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                             182
                                                                                                                                                                                                                                                                                                                                                                                     241
                                                                                                                                                                                                                                                                                                                                                                                                                             242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         303 TIPFTKNTEAEHMDMLMVCHHLDKSIKEDVQFABSRIRPQTIAAEDQLHDMGIFSITSSD 362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                  62
                                                                                                                                                               3 KISRKEYVSMYGPTTGDRVRLGDTDLILEVEHDCTTYGEEIKFGGGKTIRDGMSQTNSPS
                                                                                                                                                                                                                        ENTLDLVI TNAMI I DYTGI YKADI GI KNGKI HGI GKAGNXDMQDGVSPHMVVGVGTEALA
                                                                                                                                                                                                                                             122 GEGMIITAGGIDSHTHFLSPOOFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM
                                                                                                                                                                                                                                                                                                                        LRAAEEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD
                                                                                                                                                                                                                                                                                                                                                                                                          VOVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITMAGELNILPSSTTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          243 VQVAIHTDTINEAGCVEDTLEAIAGRTIHTPHTEGAGGGHAPDVIKAAGEFNILPASTNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       363 SOAMGRVGEVITRIWOTADKNKKEFGRLKEEKGDNDNFRIKRYISKYTINPGIAHGISDY
                                                                                                                                        2 KMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                  Gaps
                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 569;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                  85; Indels
                                                          Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Somen, Gopalan
APPLICANT: Thomas, William D., Jr.
APPLICANT: Thomas, William D., Jr.
APPLICANT: Monath, Thomas P.
TITLE OF INVENTION: Stabilization of Helicobacter Urease
FILE REFERENCE: 06132/023002
CURRENT APPLICATION NUMBER: US/09/338,920B
CURRENT FILING DATE: 2002-12-23
FRIOR FILING DATE: 1997-09-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 74.8%; Score 2244; DB 2; Best Local Similarity 72.5%; Pred. No. 1.5e-208; Matches 411; Conservative 71; Mismatches 85;
                                                        Query Match 74.8%; Score 2244; DB 2; Best Local Similarity 72.5%; Pred. No. 1.5e-208; Matches 411; Conservative 71; Mismatches 85;
- FIGURE 3."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQ ID NOS: 14
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 10
IENGTH: 569
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     YKVKVDGKEVTSKAADELSLAQLYNLF
/note= "URE B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 10, Application US/09338920B
Patent No. 6709851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ) ORGANISM: Helicobacter felis
US-09-338-920B-10
OTHER INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-338-920B-10
US-08-466-248-21
                                                                                                                                                                                                                          62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     543
                                                                                                                                                                                                                                                             63
                                                                                                                                                                                                                                                                                                                                                                                     182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  302
```

g

ò 셤 ò g ò

g à d Б

ò

셤

ò

g

ઠ

g

ò

g

ò

ö

62

```
482
                                                                                                                                      Query Match
                                                                                                                                                                                                  ઠ
                                                                                                                                                                                                                                                            ઠ
                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                               임
                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     日
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠ
242
                                                                                                                                                                                                                                              SQAMGRVGEVITRTWQTADKNKKEFGRLKEEKGDNDNFRIKRYLSKYTINPAIAHGISEY 422
                                                                                                                                                                                                                                                                                                                                                                                                                                 GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                             LRAABEYSMNVGFLGKGNSSSKKQLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD 241
                                                                                                                                                                    VQVCIHTDTVNEAGYVDDTLNAMNGRAIHAYHIEGAGGGHSPDVITWAGELNILPSSTTP 301
                                                                                                                                                                                    243 VQVAIHTDTLNEAGCVEDTMAAIAGRTWHTYHTEGAGGGHAPDIIKVAGEHNILPASTNP 302
                                                                                                                                                                                                                                TIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361
                                                                                                                                                                                                                                                                                           SQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY 421
                                                                                                                                                                                                                                                                                                                                                       IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH 481
                                                                                                                                                                                                                                                                                                                                                                                  VGSVEVGKVADLVLWSPAFFGVKPNMIIKGGFIALSQMGDANASIPTPQPVYYREMFAHH 482
                                                                                                                                                                                                                                                                                                                                                                                                                  541
                                                                                                                        GKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Frishauf, Holtz, Goodman & Woodward, P.C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 3, Application US/07732242C
Patent No. 5298399
GENERAL INFORMATION:
APPLICANT: Uczumi Takeshi, Masaki, Haruhiko;
APPLICANT: Hidaka, Makoto; Nakamura, Akira;
APPLICANT: Maeda, Michihisa; Yoneta, Yasuo;
TITLE OF INVENTION: Gene of Urease
NUMBER OF SEQUENCES: 14
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STATE: New YORK
STATE: New YORK
COUNTRY: USA
ZIP: 1016-2088
COMPUTER READABLE FORM:
MEDIUM TYPE: 3.5 inch, 0.72mb
COMPUTER: IBM PC compatible (NEC PC-9801 RX)
OPERATING SYSTEM: MS DOS
SOFTWARE: ASCII FORM
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/732,242C
FILING DATE: 19910718
CLASSIFICATION: 435
PRIOR APPLICATION: 435
PRIOR APPLICATION: HADGE 1990
ATTORNEY/AGENT INFORMATION:
NAME: GOOGMAN, HEYBER: 17081
REFERENCE/DOCKET NUMBER: 17081
REFERENCE/ODCKET NUMBER: 17081
TELECHMONICATION: INFORMATION:
TELEPHONE: (212)972-1400
TELEFAX: (212)972-1400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ADDRESSEE: Frishauf, Holt;
STREET: 600 Third Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              * ||||||| 1
YHVFVDGKEVT 553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEVFVDGKLCT 552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CITY: New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TELEX: 236268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-07-732-242C-3
                                                                                                         182
                                                                                                                                     183
                                                                                                                                                                                                                                302
                                                                                                                                                                                                                                                                                                                        363
                                                                                                                                                                                                                                                                                                                                                       422
                                                                                                                                                                                                                                                                                                                                                                                   423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            542
                 63
                                               122
                                                                                                                                                                    242
                                                                                                                                                                                                                                                             303
                                                                                                                                                                                                                                                                                           362
                                                                                                                                                                                                                                                                                                                                                                                                                 482
                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                         셤
                                                                                                     ò
                                                                                                                                   g
                                                                                                                                                                   à
                                                                                                                                                                                               ద
                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                           ઠ
```

```
Sequence 2687, Application US/09252991A

Sequence 2687, Application US/09252991A

Sequence 2681795

GENERAL INFORMATION:

APPLICANT: Marc J. Rubenfield et al.

APPLICANT: Marc J. Rubenfield et al.

TITLE OF INVENTION: MUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS

TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS

TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS

CURRENT APPLICATION NUMBER: US 60/074,788

PRIOR FILING DATE: 1998-02-18

PRIOR FILING DATE: 1998-02-18

PRIOR FILING DATE: 1998-07-27

NUMBER OF SEQ ID NOS: 33142

SEQ ID NO 26887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                       62 ENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEALA 121
                                                                                                                                                                                                                                                                                                                                                                                             122 GEGMIITAGGIDSHTHFLSPQQFPTALANGVTTMFGGGTGPVDGTNATTITPGKWNLHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     122 AEGMIVTAGGIDAHIHFICPQQIETALASGVTTMIGGGTGPATGTNATTCTPGPWNIHRM 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               182 LRAAEEYSMNVGFLGKGNSSSKKOLVEQVEAGAIGFKLHEDWGTTPSAIDHCLSVADEYD 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        302 TIPYTINTVAEHLDMIATCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSSD 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     422 IGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGHH 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    541
                                                                                                                                                                                                                                                                                                                            63
                                                                                                                                                                                                                                                                               3 MKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSN-SPD
                                                                                                                                                                                                                                                                                                          362 SQAMGRAGEVIPRIWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GKAKFDISITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPKT
                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                         э,
                                                                                                                                                                                              DB 1; Length 568;
                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                            67.6%; Score 2028.5; DB 1; 66.1%; Pred. No. 1.2e-187; ative 77; Mismatches 112;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               542 FEVFVDGKLCTSKPTSQVPLAQRYTFF 568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LENGTH: 568 amino acids
TYPE: AMINO ACID
STRANDEDNESS: single
TOPOLOGY: linear
                                                                                                                                                                                                                   Best Local Similarity 66.1%
Matches 375; Conservative
INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS
                                                                                                                      MOLECULE TYPE: peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 15
US-09-252-991A-26887
                                                                                                                                                    US-07-732-242C-3
```

```
; ORGANISM: Pseudomonas aeruginosa
US-09-252-991A-26887
```

61.0%; Score 1828; DB 2; Length 566; y 59.2%; Pred. No. 3.5e-168; rvative 87; Mismatches 143; Indels 2; Gaps 1;	MKMKKQEYVNTYGPTKGDKVRLGDTDLWAEVEHDYTTYGEELKFGAGKTIREGMGQSNSP 60		DENTLDLVITNAMIIDYTGIYKADIGIKNGKIHGIGKAGNKDMQDGVSPHMVVGVGTEAL 120	KADVGLF	AGEGMIITAGGIDSHTHFLSPQOFPTALANGVTTMFGGGTGPVDGTNATTITFGKWNLHR 180	AGEGMILTAGGIDTHIHFICPQQIEEALMSGVTTMIGGGTGPAAGTNATTCTSGPWHMAR 178	원_	MLQAADAFPMNIGFTGKGNASLPLPLEEQVLAGAIGLKLHEDWGSTPAAIDNCLEVAERH 238	9=		PTIPYTINTVAEHLDMLMTCHHLDKRIREDLQFSQSRIRPGSIAAEDVLHDMGVIAMTSS 360	PTRPFTRNTIDEHLDMLMVCHHLDPAIAEDVAFAESRIRRETIAAEDILHDLGAFSMISS 358	DSQAMGRAGEVIPRTWQTADKNKKEFGKLPEDGKDNDNFRIKRYISKYTINPALTHGVSE 420	DSQAMGRVGEVITRTWQTADKWKGQRGRLDGDGARNDNFRARRYIAKYTINPAITHGISH 418	YIGSVEEGKIADLVVWNPAFFGVKPKIVIKGGMVVFSEMGDSNASVPTPQPVYYREMFGH 480	:	HGKAKFDTSITFVSKVAYENGVKEKLGLERQVLPVKNCRNITKKDFKFNDKTAKITVDPK 540	: :: : : :: :: :	TFEVFVDGKLCTSKPTSQVPLAQRYTFF 568	nyovradgoliwcepadvipwagryfip 566	
61.0%; nilarity 59.2%; Conservative	MKMKKQEYVNTYGPTKGD	MKISRQAYADMFGPTVGDF	DENTLDLVITNAMIIDYTC	AAQVVDTVITNALILDHWG	AGEGMIITAGGIDSHTHFI		MLRAAEEYSMNVGFLGKGN	_	DVQVCIHTDTVNEAGYVDI		PTIPYTINTVAEHLDMLM1										
Query Match Best Local Sir Matches 336;	0y 1	Db 1	Qy 61	Db 61	Qy 121	Db 119	Qy 181	179 da	Qy 241	Db 239	Qy 301	Db 299	0y 361	Db 359	Qy 421	Db 419	Oy 481	Db 479	Qy 541	Db 539	

Search completed: November 28, 2005, 08:25:42 Job time : 48.4987 secs